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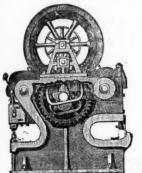
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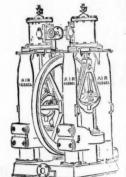
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LONDON, SATURDAY, SEPTEMBER 18, 1875.

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WORK of all descriptions, and all kinds of MATERIALS required for

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THE McKEAN ROCK DRILL is attaining general use throughout the World for Mining, Tunnelling, Quarrying, and Sub-Marine Boring. EIGHT DIFFERENT TYPES AND SIZES OF THE McKean Drill are now produced, affording a selection of the most suitable for any special work. The smallest McKean Rock Drill weighs only 70 lbs. ALL MCKEAN'S ROCK DRILLS AP GUARAN-TEED FOR A TERM, WITHOUT EXTRA CHARGE.

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They work with a lower pressure than any other Rock Drill. They may be worked at a higher pressure than any other. They may be run with safety to 1500 strokes per minute.

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It has been selected by the Admiralty for their works, and is extensively used at the principal Mines, Collieries, and Quarries of Great Britain, and the Continent of Europe.

"To this invention, which appears to possess several advantages over the machines previously exhibited at Falmouth, the Judges are unanimous in awarding a first-class silver medal" (the highest award).—Report of the Judges at the Royal Cornwall Polytechnic Society s Exhibition, 1873.

"The boring machine works splendidly."—W. TORRANCE: Mid-Calder.

"For simplicity, compactness, and performance of work, your drill excels all others."—JOHN MAIN: Crossfield **xromvorks*.

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"The simplest and best boring machine."—Capt. WASLEY'S letter to the Mining Journal, Oct. 18, 1873.

The advantages over other Rock-boring Machines claimed for the "Kainotomon" are-

-It is much shorter.

1.—It is much shorter.
2.—It is much lighter, and more readily removed from place to place.
3.—It requires the turning of ONLY ONE, instead of a number, of set screws, to fix it in position at any angle.
4.—It may be fed 3 inches out of stroke, without stopping the working of the drill, an invaluable advantage.

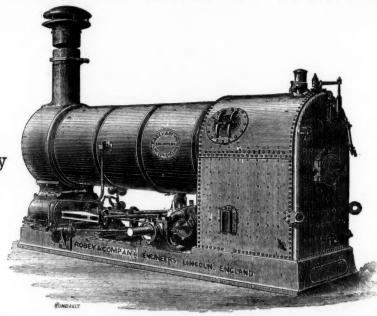
... It is not liable to derangement.
... It has not one-third the number of parts in its construction.
... It has not one-third the number of parts in its construction.
... All stuffing-boxes and parts requiring adjustment are dispensed with.
... It is so simple in its construction that any ordinary labourer or miner can drive it, simply having to turn on the motive power and feed the drill.

9.—The rotation is compulsory, and regular.
10.—40 lbs. pressure only is required to work it.
11.—A saving of over 50 per cent. in iron and flexible piping.

"The simplest and best boring machine."—Capt. Washington, W. E. Walken: Lord Leconfield's Iron Mines.
"It gives every satisfaction."—W. E. Walken: Lord Leconfield's Iron Mines.
"The rock-drill I bought of you seven months ago has given me entire satisfaction, and I am convinced that the 'Kainotomon' is the best rock-drill in the market."—P. McGinnis: Strabme.
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S. Jenkins: Abertillery. "THE ECONOMIC" COAL-CUTTERS, AIR COMPRESSORS, BOILERS, &c. THOS. A. WARRINGTON, 30, KING STREET, CHEAPSIDE, LONDON, E.C.

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The Boiler is specially arranged to burn saw-dust and refuse wood, and every description of inferior fuel, and thus economise Coal.

The Cost of all expensive Brick Buildings and Chimney is saved by this Engine.

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This New Patent Engine is free from all the objections that can be urged against using the old style of Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the emi-Portable, in saving time and expense in fixing.

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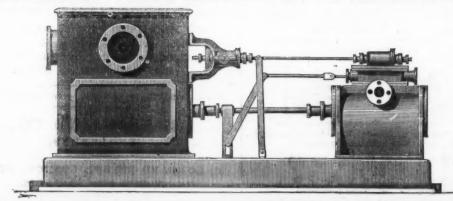
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Original Correspondence.

COAL-CUTTING MACHINERY IN ENGLAND AND AMERICA. THE "MONITOR" AND THE "PICK."

SIB,-At about the same date that Mr. Alexander, of Philadelphia SIR.—At about the same date that Mr. Alexander, of Philadelphia, wrote the letter which appears in the Supplement to the Mining Journal of Sept. 4, a new edition of the article, by which that gentleman originally introduced the Monitor, appeared in some of the American newspapers, containing important matter, which he withheld from the letter he addressed to you; and it is probable that he supposed that we should not in this country become aware of the

I have no right to complain of anything Mr. Alexander may choose I have no right to complain of anything Mr. Alexander may choose to say in praise of the invention which he represents, but when he, in the capacity of the advocate of the Monitor, and for the purpose of placing that machine in the advanced position which the Pick had acquired, by the employment of deliberate misrepresentation, which cannot be supported by a tittle of evidence, then his part in the transaction is changed, and I am at liberty to comment upon and show its real character. It is a singular fact that in England connection with the rotary principle of coal-cutting has brought with it hitherto a palpable disregard of fairness towards its more successful rival; and Mr. Alexander has fallen into the same condition. I am, however, tired of having to keep watch upon their proceed-

cessful rival; and Mr. Alexander has fallen into the same condition. I am, however, tired of having to keep watch upon their proceedings and exposing their misstatements.

In the original paper by Mr. Alexander the working capacity of the Monitor was undoubtedly set at 50 tons per day of 10 hours, or 5 tons per hour, and no more; but it has since been increased to from 70 to 80; and taking this at the mean (say, 75) would give 7½ tons to the hour, or an improvement of 50 per cent. at one bound. I shall raise no words of objection to this sudden and large improvement, although it does seem very large. To do this work Mr. Alexander states that his consumption of power is 13 68 horse power; but by

although it does seem very large. To do this work Mr. Alexander states that his consumption of power is 13:08 horse power; but by his own figures, if correctly worked out, it is more than this. I shall, however, for present purposes adopt his calculation, for, as will be presently seen, I need not to be very stringent in the matter.

The working capacity of the Pick may, from long experience, be safely rated at an average of 10 tons per hour, or 100 tons per day of 10 hours, in a seam of corresponding thickness to the one from which the Monitor's quantity is taken, and that the power used in cutting this is 4:75 horse power; and whilst for controversial objects I have never pitched the quantity higher than these figures indicate, we have cut in shorter periods at the rate of more than five times this quantity. Allowing, then, to the Monitor the maximum of its claim, and to the Pick the minimum, the following are the results this quantity. Allowing; then, to the Monitor the maximum of it claim, and to the Pick the minimum, the following are the results—

Monitor... 75 tons in 10 hours; horse-power ... 13-68 Pick 100 "

More work done-33 p. ct. by the Pick, with less power by 188 p. ct.

More work done—33½ p. ct. by the Pick, with less power by 188 p. ct.

These facts were well known to Mr. Alexander, and cannot be gainaid; and yet in the face of them he scruples not to put into the American newspapers a statement of which the following is a copy:—

"The discussion in Great Britoin has caused more careful attention to be given to its manipulation until now it (Monitor) is, as stated above, the superior of the British machines, being able to cut at a less cost per ton for power than the famous Firthmachine; cuts three times as much coal, and requires no more men to operate it."

This monstrous misrepresentation could only be intended for the eyes of Mr. Alexander's neighbours, who would naturally accept it from him as truthful, and would not suspect its real character. It has never been proven by any witness that the Monitor has ever in any single instance cut more than 70 to 80 tons in one day of 10 hours, whereas there is abundant evidence, from independent witnesses. whereas there is abundant evidence, from independent witnesses, that the Pick has cut by the week together nearly twice that quantity, and yet with this knowledge Mr. Alexander has not scrupled to assert that his machine "cuts three times the quantity of the famous First machine" yous Firth machine.

I will next turn to the letter addressed to you, wherein it is stated—
"That the swinging arm of the Pick not only comes in contact with a great deal
closes coal in the groove, but channels out double the quantity of the Monitor.
It requires very little mechanical skill to understand that if the Pick cuts a groove
double the width of that cut by the Monitor, it must follow that double the friction
(resistance) is much with, and, therefore, double the power required to overcome it.
One of the important advantages of the Monitor is very forcibly shown here. I
refer to the reduction to the minimum of the waste in mining. The difference
between these two machines in this item alone would in a year's operations make
aming little sum in favour of the Monitor."
I admit fully that it does require very little mechanical skill to
understand this proposition, and I also admit that Mr. Alexander
possesses the requisite quantity of it; and so it follows that the Pick
is doing with but 4:75-horse power double the actual work (friction)
that is performed by the Monitor with 13:68-horse power; and so it
again follows that if the Monitor were required to "channel out"
the same quantity as is done by the old Pick, then 27:36-horse power
would have to be provided, and I think Mr. Alexander will not be would have to be provided, and I think Mr. Alexander will not be able to get over that. But it may not be pleasant to Mr. Alexander to know that in

Pebruary last, and before this controversy commenced, I had obtained a patent for some important improvements in coal-cutting by machinery, and that one of them enables the Pick to reduce the width of the groove to one-half of its former self; and so it follows again that there is no "snug little sum," and again it follows that the friction being reduced, as Mr. Alexander so clearly lays down, to one-half than the reformed Pick, will consume only 2:37½-horse power, instead of as heretofore 4:75.

half than the reformed Pick, will consume only 2:37½-horse power, instead of as heretofore 4:75.

I may say here that nothing could be more sound or more satisfactory than the way Mr. Alexander has here established the economy in power of the pick, and although he has done it unwittingly, and contrary to his intention, my thanks are not the less due to him; and if he will allow me to make a suggestion to him, he might still make good use of his weapon by directing it against the Gillot and Copley rotary machine, which certainly does "channel out" the large quantity of coal which Mr. Alexander, in ignorance of late events, wrongly imputed to the Pick.

quantity of coal which Mr. Alexander, in ignorance of late events, wrongly imputed to the Pick.

In considering the "air pressure," I agree with Mr. Alexander, when he says that it is as between the two systems a great "stumbling block," nor has he adduced anything towards its removal. His experience seems to be limited to the very short length of transmission of 175 yards, or 500 feet. His pipes are of 3 in. diameter, with an area of 7.060, whereas the Pick is working at a distance of 9000 ft. with 2-in. pipes, the area being 3.140 only; and notwithstanding the great disparity both in capacity and distance, he tells as that when he gets further away than 500 ft, from his compressing engines he proposes enlarging the size of his pipes, in order to diminish fraction. If Mr. Alexander could inform us as to what would be the size of his pipes when he advances to 8000 or 9000 feet disbe the size of his pipes when he advances to 8000 or 9000 feet distance, and what would be the remaining power sysiable to him at would really render some service. I have shown that at 40 lbs. it doubtful except a will transmit 9000 feet efficiently, and I do not consider it "doubtful except a will transmit?" "doubtful engineering!"
It is yet an unsettled point whether or not it is commercially

economical to employ large and heavy plant with lower pressure, or light and cheaper first cost with higher pressure? At collieries ber is generally much inferior fuel, hardly worth the cost of trans-ortation, but capable of giving steam for compression, and I incline own of the cost of trans-ortation of transes asys, "I would remind Mr. Firth that the air-conveying pipe applying the Pick in Monmouthshire was, at the time of my visit, in diameter." On seeing this I wrote to the Garth Colliery or information, and the reply is, "Two or three years ago we had thin pipes from the pit bottom, finishing at the machine with 1½ in., and the week machine with 1½ in., to now we have nothing in the bottom above 2 in. Down the pit, 160 yards, we have 4 in pipes. I will make no comments upon this

it finished with the ludicrous result of 3 square yards of groove! and if the Monitor could be got into one of our average English seams I am of opinion that it would not do better than its English model. I think I may now, not unreasonably, ask the question why this recently-constructed mechine, represented by Mr. Alexander, should be styled "The Monitor"? The title is an evidence of conceit, because the invention teaches nothing new, nor anything that can be advantageously followed. It is most wasteful in power; heavy and unportable, the dead weight being about double that of any of its rivals; complex in construction, with innumerable working parts, which must lead to great cost in maintenance; incapable of being worked in mines where the strata are irregular in line, or ing parts, which must lead to great cost in maintenance; incapable of being worked in mines where the strata are irregular in line, or containing pyrites or other hard substances. And considering that the inventor had the advantage of seeing and studying all that had been done in this country for nearly a dozen years before he produced his Monitor, during which process, as we are told by Mr. Alexander, "many decidedly unique devices were discovered," it cannot be looked upon otherwise than as a miserable failure, and being bad in principle, no artifice can long disguise the fact, nor any subtle design afford a remedy.

One more passage and I have finished. Mr. Alexander confesses that a great improvement has been accomplished in the Monitor's performances through the discussions which have taken place in Great Britain, and taking it to be so, to whom is the credit due? He has always been chary in according to me any credit for my efforts in the general cause in this country, and I hardly expect that he will be more just in respect to this particular improvement; and

he will be more just in respect to this particular improvement; and as I think so little of the machine in this amended form, what may it have been before the discussion?

WILLIAM FIRTH. Burley Wood, Leeds, Sept. 14.

"TRUE HEROISM."

"TRUE HEROISM."

SIR.—I trust you will allow me space in your columns to appeal to all lovers of true heroism for a mark of public favour to one Elijah Hallam, a collier at the Derbyshire Silkstone Colliery. His story briefly told is this:—In consequence of the failure of one of the "conductors" at the colliery, the ascending and descending cages met, and collided a hundred yards down the shaft, and the descending cage, in which were six men, was crushed. The broken cage hung in the shaft, and the men were almost suffocated by the fumes of the ventilating furnace beneath them. Then Hallam nobly volunteered to go down and rescue them. He was accordingly lowered down the pit to the depth of 300 ft., time after time, until he had rescued them all. The result was that only one man expired afterwards, whereas the whole would undoubtedly have perished if they had remained suspended in the pit. Thus did this brave miner expose himself to imminent peril for the long period of one hour and a half. As the Coroner told Hallam at the inquest, his deed will be an honour to him through life. I am sure there are many who will gladly subscribe to raise a testimonial to one are many who will gladly subscribe to raise a testimonial to one whose action was not prompted by any desire for fame; but merely to save the lives of his fellow-creatures. I have already had promises of money, and shall be glad to receive any subscriptions to be applied in the manner most serviceable to him.

Queen's Gardens, Lancaster Gate, Sept. 15. J. A. STIRLING.

THE NEW COLLIERY AND IRON COMPANIES.

SIR,-Collieries and ironworks seem to be now in a most anoma ons condition. Charges are freely brought against directors for squandering the capital of the companies through neglect, or, what is worse, the misappropriation of the funds. Circulars are issued to the shareholders by others whose object it is to displace the directors. Actions at law are threatened against the former, and hopes held out that the shareholders' money will be restored in part or in full. Meetings are called, and the old directors are dismissed, and the row way who reads such fair promises are dested in their stead. the new men who made such fair promises are elected in their stead. But what is the general result of this shifting of the scenes? The shares sink in the market, as under the new hands the work is not But what is the general result of this shifting of the scenes? The shares sink in the market, as under the new hands the work is not carried on one whit better than under the former management. In the Nant-y-Glo and Blaina the shares have fallen under a new directorate, and, what is singular, even after the recovery of a large sum of money in a Chancery suit. So little confidence have the public in the present management the shares have fallen still further. In the Cardiff and Swansea the new directors have yet inspired so little hopes of better success that the quotation is lower than it ever was under the old directors. In the New Sharlston Colliery the new directors, who absolutely inundated us with a flood of circulars until we were gained over to promise them our votes, contentedly receive their fees, but place us much farther from the chance of a dividend than their worthless predecessors. One would think if things were properly conducted in a colliery of which the output is 700 tons per day a dividend might be expected. The balance-sheet just furnished speaks badly for the management. The accounts show a profit earned for the half-year to June 30 of 7306l. But how is this profit disposed of? After writing off 7415l. for depreciation to Dec. 31, 1874, they boldly struck off 3790l. besides for the last half-year only. No wonder that the auditor, Mr. Waddell, thought it proper to justify this depreciation as "based upon the mode of assessment recommended by Mr. Jeffcock." We cannot ever expect a dividend if in a colliery of the large daily output of 700 tons, and which earned a profit of 7306l. in one half-year, more than half the earnings be retained for depreciation. In a word, one set of directors is just as good as another, to whom the fees of the former have been transferred, while the latter seem more intent on frittering away the half-year's profits by ingenious theories of depreciation than distransferred, while the latter seem more intent on frittering away transferred, while the latter seem more ment on intering away the half-year's profits by ingenious theories of depreciation than dis-posed to make any reduction in their own salaries. Truly, it is a wretched state of things to raise coal to the amount of 75,800 tons in six months, making a profit of only 1s. 11d. per ton, and to hold 1s. of this for depreciation, working only nine days in the fortnight. The fault is not in the mine.

IMPROVED METALLURGICAL PROCESS.

IMPROVED METALLURGICAL PROCESS.

SIR,—I have attentively read the interesting article in the Supplement to last week's Journal, with reference to Mr. Lyttle's metallurgical patents, and fear he has entirely misunderstood the effect of Mr. Isaac Lowthian Bell's researches if he supposes that any one process is applicable to all classes of ore. Any process which seeks to generalise iron metallurgy without consideration of the particular ore with which the furnaceman will have to deal must result in failure; it would, therefore, be well if Mr. Lyttle would state to the ores of what district he proposes that his inventions should be applied. As Mr. Lyttle claims to have a simple, cheap, and roughly go-ahead principle, it is to the interest both of himself and of the public that the most complete particulars should be given. The system of agglomerating the iron ore and fuel, both being first reduced to powder, is not altogether new, but if Mr. Lyttle has sucsystem of agglomerating the iron ore and fuel, both being first reduced to powder, is not altogether new, but if Mr. Lyttle has succeeded in making it practically applicable, he will not fail to receive a large reward. The very common objection to the use of duff for fuel in the blast-furnace is that there is even greater difficulty in keeping it free from impurities than there is with ordinary sized coal, and it has sometimes been found that those who talk most glibly about ferric carbides, and other salts of iron, display least useful acquaintance with the chemical changes going on in the blast-furnace. It was from the exceptional circumstance of Mr. Bell being both a chemist and a metallurgist that enabled him to give the ironboth a chemist and a metallurgist that enabled him to give the iron making world a book which is invaluable to every member of it; and it is for the same reason that his writings have been so the roughly incomprehensible to theorists whose acquaintance with iron roughly incomprehensions to the clear state whose acquaintance with iron metallurgy is limited to that obtainable on the banks of the Thames, and whose chemical experience has been gained without inhaling the unwholesome fumes of the laboratory. I am not aware that Mr. Bell has ignored the power of carbonic oxide gas, and probably no one would be more surprised than he that such a claim should

so that the blast-furnace becomes choked; and this being so, I should like to know how Mr. Lyttle, having both ore and fuel in powder, proposes to agglomerate the mass, so that it will bear the blast? The very general opinion among iron men is that the furnace would be choked in a few hours, and assuming 80-ft. furnaces to be used as is now done in the Cleveland district, the furnacemen might fairly reckon upon 50 hours idling each week and not more than 6 hours work. I can assure you that the clearing of only one 80-ft. furnace, if filled with duff coal and iron ore sand, would cost ten times as much as to make a charge of iron by the ordinary method. I do not doubt that Mr. Lyttle has considered this, but if he desire to secure confidence for his process he must prove that he can inexpensively produce a conglomerate that will bear the blast, and this, too, without resorting to any "knowing dodge," for slang is always to be deprecated in technical discussion, whilst he must show that the conglomerate will part with its iron as readily as the iron ore from which it is manufactured. Owners of peat lands would, no doubt, be ready to allow Mr. Lyttle, upon easy terms, to experiment in the application of peat fuel to the manufacture of iron by his process, but hitherto the results have been so unsatisfactory that it could scarcely be expected that capitalists would risk anything further in the matter. I fear Mr. Lyttle has made a too common mistake in stating what he intends to do without explaining with sufficient accuracy how he will do it. Iron-masters are very practical men, and have been so often deluded by unfulfilled promises that they now require something tangible. Mr. Lyttle has evidently given much attention to the scientific part of the question, and as he has secured his patents he can, without risk to himself, demonstrate their practicability through the columns of the Mining Journal.—Sept. 13.

STEAM SUPERSEDED—TRUSS'S PATENT HYDRODYNAMIC

STEAM SUPERSEDED-TRUSS'S PATENT HYDRODYNAMIC ENGINE.

SIR,-The object of this invention is to supersede the use of steam SIR,—The object of this invention is to supersede the use of steam in the working of engines. This announcement will probably be looked upon as the result of an excited imagination; but Mr. Truss is a consulting, civil, mining, and mechanical engineer of some 20 years standing, possessing extensive practical experience, and his startling statement is worthy, therefore, at least of consideration. To be told that engines shall work without coals or fuel of any description, and without boilers, and that the two greatest known powers in machines and hydrostatics are linked together to constitute a continuous motive power of any magnitude; and that the greater shall be subservient to the lesser from and after a first given pressure of the former, is a proposition calculated to arouse at least greater shall be subservient to the lesser from and atter a first given pressure of the former, is a proposition calculated to arouse at least suspicion, if not cause entire disbelief. Again, to be informed that such an apparatus shall occupy much less space than a steamengine, and cost nothing for working beyond the expense of lubrication and attention of one man, involves the most severe scrutiny

and cost nothing for working beyond the expense of lubrication and attention of one man, involves the most severe scrutiny of the means proposed to such an end.

The steamship, the locomotive, the underground machine, and the motive power of factories will, of course, be the subjects, if this invention performs what it promises, of a change far transending that from manual to steam-power. Although the process would suggest the idea of perpetual motion, Mr. Truss states it is merely an approximation to that method of obtaining power. The invention is founded on the principles of mechanics and hydrostatics, and consists of a mechanical combination to operate upon nonelastic fluids to constitute motive power by which is obtained an engine with self-sustaining motive power from a first given pressure for any period of time, until the machinery needs repairs, the first given pressure being applied by manual labour in a few minutes. Thus an engine is so constructed that it will maintain its own motive power, and, at the same time, give off any amount of horse-power the designer determines. The mechanical combination is exceedingly simple. The combination to the effect consists of a drum, on the periphery or outer diameter of which are two protruding feathers, or bands, each having an ascending gradient for half of the circumference, and a descending gradient on the other half, with the ends of the feathers uniting, so that the rotation of the drum gives the action of a penetration wedge, for one-half its circumference, and a withdrawing wedge action for the other half. Around this drum are arranged two rows of force pumps, each pump having a cross-head constructed to receive the protruding gradient feather—that is, not the drum—bered the protruding gradient feather—that is, not the drum—bered pressure, to constitute a continuous motive power. To the high pressure chamber of the pumps is a very simple contrivance of plunges, three in number, for regulating the pressure per square inch to be applied upon the piston of nuid used. This arrangement is called the regulating pressure guage. This machinery is connected to the engine to be driven, which is of the ordinary description but much smaller for the same power, and the water under pressure is turned on and off to the cylinders to propel or stop the pistons in them, in the same manner as in a steam-engine, which water, after use in the engine cylinders, returns by the exhaust through a small supply tank to the force-pumps again, so that there is no waste of water, save by evaporation. This is also another most important matter. The crank shaft of the engine is connected to the shaft on which the drum is fixed by cog-wheels, so that motion to the engine is motion to the drum, and so to the pumps. The other details of the invention are contrivances of great simplicity, as all the parts are in keeping with the general of great simplicity, as all the parts are in keeping with the general idea of the structure.

idea of the structure.

The following are some particulars showing the rules guiding in the construction of this class of engine. These figures, it will be seen, afford a strong presumption in favour of the invention for

seen, afford a strong presumption in layour of the involution effect and success.

Taking a double cylinder engine, having cylinders of 10 indiameter and 10 in. stroke, the following is the arrangement of the combination and horse-power.

The engine is geared to the shaft on which the drum is fixed that works the pumps with an increase of power of 2½ to 1, thus:—Giving 1 lb. on crank joint of engine, 1 lb. on the centre of protruding bend on the periphery of the drum; thus the diameter of the drum gives a wedge action of 5 to 1 increase power. Now take the 2 cylinders of 10 in. diameter, which in round numbers equal an area of 156 in., with the speed of engine at 2½ to 1 of the drum, this gives area of force the speed of engine at 21 to 1 of the drum, this gives area of force pump plungers required with the same stroke as engine as 780 in. we have to divide 780 in. by 2, which gives 390 in. for reduced area we have to divide 780 in. by 2, which gives 390 in for reduced area of pumps required to supply the water for the cylinders of the engine at the given velocity. The last sum divided by the number of force pumps determined upon, with 1-10th more allowed for leakage. For increase supply of water, or increase of power, which in this case is 56, we have 440 in. divided by 56 for area of each pump plunger, which, apart from friction, is 8 in. Now, as the action of the motion working the pumps is such that only half the force pumps are in force action at once, if we take the pressure per square inch in the high pressure chamber of the pumps at 300 lbs., we have an area of pumps in action 224 in. which, multiplied by the pressure, 300 lbs., we have 67,000 lbs., which sum, divided by the increase power of wedge action 5 to 1, we have 13,440 lbs. pressure on the crank pin of the engine as required to work the drum, and on the crank pin of the engine as required to work the drum, and

on seeing this I wrote to the Garth Colliery information, and the reply is, "Two or three years ago we had had been working very well for two or three years in a metallurgy is limited to that obtainable on the banks of the Thames, and the reply is, "Two or three years ago we had had whose chemical experience has been gained without inhaling and whose chemical experience has been gained without inhaling and whose chemical experience has been gained without inhaling the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. I am not aware that the unwholesome fumes of the laboratory. If the unwholesome fumes of the laboratory. If the unwholesome fumes of the laboratory. If the unwholesome fumes of the fum had the same had a claim should be set up for him.

But Mr. Bell is quite able to fight his own battle in most question of 33,360 lbs. on the engine-reak; if we now aware the pressure required to work the drum, and the unwholesome fumes of the laborator

mechanical action which embodies his idea is all that can be desired. Its working is both noiseless and smooth. The figures speak for themselves. We have now the invention placed before us of its merits, engineers will be able to judge that a gentleman of scientific knowledge with some 34 years' practical experience should convince to the world by patent a discovery that is calculated to revolutionise our whole system of mechanical working may appear startling, but, nevertheless, no invention, however astounding the theory of its construction, should be deemed to be wrong in principle until so proved by scientific investigation in the land of Watt, and in the age of electricity.—Regent-street, Sept. 15.

NEW SYSTEM OF OIL METALLURGY.

SIR,—It has become my duty, an unpleasant one, of course, to be forced to point out some errors of figures in my report upon the Eames Petroleum Furnace, which has been so kindly noticed in the Supplement to the Journal of Aug. 28. It is difficult for me now to understand how I could have been guilty of such transparent miscalculation. My only consolation is that the corrections do not essentially modify the conclusions drawn. The unconscious exaggeration in favour of the oil is, however, so important that it would be wrong to let it stand. would be wrong to let it stand.

For the passage which reads as follows:—"The specific heat of iron being taken at '112 to heat the 3000lbs, of iron to 3000°, takes 336,000 units, and there is left for steam 2,810,040 units per hour. Taking the heat of steam from water at 80° F. as 1148 units, there must be 2447 lbs. of water converted into steam per hour; or, assuming 1 lb. best anthracite burned directly under the boiler equal to making 8 lbs. of steam, we have here in the waste heat of one petroleum furnace, heating also 3000 lbs. of iron, the equivalent of 306 lbs. of scell burned receivers at 40° lbs. petroleum furnace, neuting also cook loss. every 80 minutes, directly 306 lbs. of coal burned per hour, or 408 lbs. every 80 minutes, directly

under the boiler."

The specific heat of iron being taken at '112, to heat the 3000 lbs. of iron to a welding heat—say, 2000°, takes 672,000 units, and there is left for steam 2,374,040 units per hour. Taking the heat of steam from water at 80° F., as 1148 units, there must be the heat of steam from water at 80° F., as 1140 units, there must be 2068 lbs. of water converted into steam per hour; or, assuming 1 lb. best anthracite burned directly under the boiler equal to making 8 lbs. of steam, we bave here in the waste heat of one petroleum furnace, heating also 3000 lbs. of iron, the equivalent of 258 5 lbs. of coal burned per hour, or 344 5 lbs. every 80 minutes, directly under the boiler."—Hoboken, New Jersey, U.S., Aug. 30. HENRY WURTZ.

THE CHANNEL TUNNEL—THE SUBMERGED TUBE SYSTEM.

SIR,—The eminent engineers who once upon a time pronounced on the feasibility of boring a tunnel beneath the waters of the English Channel have since so frequently changed their plans that it would be unsafe to predict which of these will be finally decided upon. Mr. Austin was the first—some twenty years ago—to publish details on this stupendous project, and the actual promoters have followed him with almost ludicrous fidelity, without, however, admitting him into their councils, a system not uncommon among eminent engineers. Mr. Austin's original proposition was to bore down to a sufficient depth to permit the gradient rising towards mid-channel engineers. Mr. Austin's original proposition was to bore down to a sufficient depth to permit the gradient rising towards mid-channel, and this was approved by the eminent conclave. Subsequently, he saw reasons for changing the direction of the gradient, preferring that the deepest part of the tunnel should be in mid-channel. According to one of the illustrated papers, this last plan is the one to be adopted; but then Mr. Austin may have other improvements to suggest consequently, this last design may not be a finality as suggest—consequently, this last decision may not be a finality, as the eminent engineers may be waiting for further emanations from the brain of the originator. By the time they are in possession of all his secrets they will, doubtless, acquire the title of very eminent. There is hardly room to doubt but that the only great difficulty that can be encountered in boring must be the miner's great enemy—water. At least, compared to this, all other obstacles sink into insignificance. It is honed that the grey chalk will be met at a me.

insignificance. It is hoped that the grey chalk will be met at a moderate depth, and that—unlike the white, which it is admitted is as

derate depth, and that—unlike the white, which it is admitted is as full of water as a sponge—it is comparatively dry. Some well-known geologists, however, have pronounced against the correctness of this assumption, and have asserted that no engine-power could remove the water from the workings so rapidly as it would accumulate. Assuming this opinion well founded the attempt must end in failure. But why persist, in this age of iron, in the antediluvian plan of boring the earth beneath the waters of the Charnel, when there can be no difficulty in boring through the sea itself? England is separated from the Continent by a channel about 120,000 ft. wide. The waters rest on a sandy plain, which is so nearly level that were it left dry the undulations would not be visible. Could it be imagined for a moment that the sea would disappear during a few years no one could see any difficulty in constructing a railway enclosed in an iron tube, even with the certainty that the waters would eventually flow tube, even with the certainty that the waters would eventually flow tube, even with the certainty that the waters would eventually flow over the Channel bed. It would be readily understood that the question of safety would be simply one of thickness of metal, for, once placed securely in situ, the flowing of the waters would cause the sand to accumulate around the tube; in fact, the whole would become a ridge constituting an inseparable portion of the bed of the Channel. Within the gigantic tube the trains would run far mora securely from shore to shore than the ship tossed on the waves; but, so powerful is the force of habit on the mind, men risk themselves fearlessly in large or small vessels, exposed many days or weeks to fearlessly in large or small vessels, exposed many days or weeks to the fury of the gale, yet stand aghast at the idea of a railway tube immovably fixed 100 or 200 ft, below the surface of the waves. Men are aware that fearful tragedies are daily occurring at sea, ships with their precious freights of human lives being engulphed beneath the pittless waves; but then they have become familiar with these catastrophes, while the submarine railway is an "untried novelty." catastropnes, while the submarine railway is an "untried noveity." Next century, when numerous lines of submarine railways will have been constructed across firths and channels, few persons will care to risk themselves in boats on the stormy waves when the trains will be in readiness to conveyacross through the sea itself, in the gigantic iron tube snugly resting on the soil below.

I have said that there could be no difficulty in constructing the

Dover and Calais Submarine Railway were the waters of the Channel to disappear during a few years. This phenomenon can, of course, never occur; but why should the water itself be considered an obstacle? So far as building the one hundred sections of the tube, each stacle? So far as building the one hundred sections of the tube, each 1200 ft. in length, on the sea-shore, there would be less difficulty than in building ships each one-fourth of that length, as the tubes would be of uniform shape the whole length, and could be rolled into the sea at high tide from the stages or platforms on which they would be constructed. The "engineering difficulties" could, therefore, consist only in lowering each section, and in connecting them under water; but even this portion of the work would sink into insignificance compared to the difficulties which have been encountered in constructing breakwaters in exposed situations. No diving would be required as, by means of guide-rods, the sections would be lowered in vitu, and brought end to end, then connected from inside. The details relating to this stupendous work could not be given without details relating to this stupendous work could not be given without being illustrated by numerous engravings; but, after devoting at-tention to the matter during from 30 to 40 years, I fearlessly assert that I have now matured the plans, so that the submarine railway can be completed more easily than constructing a bridge across the Thames. It is simply a question of pounds, shillings, and pence. The shore ends would require other protection from the fury of

the waves than could be given by merely placing the tubes on the sea-shore. Here I propose to enclose the cylindrical tube in an outer shell of wrought-iron, at least 100 ft. wide at the base, and sloping on each side towards the centre. As this shell would be considerably larger than the inner tube, I would fill the space between with brickwork and cement, so that the inner tube would be completely embedded in masonry. This double tube would extend from one to two miles in the sea, on each side of the Channel, and would be also carried inland 300 yards beyond high-water mark. This land section would be embedded in massive atons masonry and would thus give would be embedded in massive stone masonry, and would thus give great strength and rigidity to the portion exposed to the fury of the waves, rendering the structure immovably fixed to the soil. The locomotive, with its long train of carriages, would thunder its way through this tunnel from shore to shore with infinitely more safety than is experienced by those who are doomed to sail in the unwieldly

ron-clad ships of war. Those structures, in fact, have an ugly ten-

iron-clad ships of war. Those structures, in fact, have an ugly tendency, under very slight provocation, to find their way into the bottom of the sea, and seem to keep aftoat only under protest that 18-in. plates were never meant to fly over the waves during a gale. The thickness of metal required for the tube should be at least 3 in.; but I would prefer two plates, each half that thickness, leaving a space of 6 in. between, which space I would fill with a tough waterproof composition. Such a tube would bear any superincumbent weight, even the wreck of a vessel should it sink in that locality. One great advantage of the submarine railway over the ordinary

One great advantage of the submarine railway over the ordinary tunnel is that with the former the length would be only equal to the breadth of the narrowest part of the Channel, while with the latter the subterranean boring would extend to from 30 to 40 miles, leaving the distance between Dover and Calais by rail nearly 60 miles, unless the inhabitants of those border towns should be lowered down the ventilating shafts near the shore.

the ventilating shafts near the shore.

I have hitherto spoken of only one tube to contain a double line of railway. I, however, believe that there should be two tubes connected together, leaving openings between at intervals for ventilation. One of those tubes would be used simply for the purpose of connecting the turnpike-roads of England with the common roads of France. By this arrangement vehicles of all kinds and Jpedestrians could cross over to the Continent independently of the railway. Valuable as railways are, the common roads which connect the towns of England are not less so; and it may be asserted that if a common road existed in connection with the submarine railway if a common road existed in connection with the submarine railway it would be extensively used. Of course, such a road could not be made in a tunnel bored 500 ft. below.

I now come to the question of cost. That it will be enormous no

one can doubt; I would say not less than one million sterling per mile whatever plan may be adopted. True, the eminent engineers estimate the cost at little more than one-fourth of that figure, but they are surely reckoning without their host. They propose to line the tunnel with brickwork; but, if an iron tube as strong as that required for the submarine railway is not built as the boring progresses, the whole affair might come to grief. Chalk is a soft substance unless perfectly dry; and, consequently, the pressure above might be exerted on the arch. It is imagined that this but a remote contingency; but it is one which must be guarded against in the construction of the submarine railway. It is improbable that an iron-clad, decided to float no longer on a sea of troubles, and determined to seek a resting place in the quiet depths below, should choose to fix itself forever on the iron tube; but such a freak is not impossible, and, consequently, the tube should be constructed of sufficient strength to bear the weight of the ugly monster. So in boring at a great depth a cheap tunnel would be false economy. The arching must be constructed of sufficient strength to render the collapse

of any portion an impossibility.

At the meeting of the British Association Sir John Hawkshaw remarked that the Channel Railway must be made so as to prove remumarked that the Channel Kallway must be made so as to prove remu-nerative. Doubtless, this statement was given with the view of in-ducing capitalists to purchase shares, but he gave no statistics to prove the truth of his assertion—I suppose for the reason that such statistics could not be given. It has been clearly proved in the pages of the Mining Journal that the tunnel could never be used for conveying heavy goods—such as coal, stone, metals, &c.; conse-quently the company would have to rely almost exclusively on the quently the company would have to rely almost exclusively on the passenger traffic to pay interest on the many millions sterling which must be expended before the stupendous undertaking is completed. The fact is that, unless the Governments of Europe are prepared to guarantee a moderate rate of interest on the capital, the work need not even be attempted. The value of this great highway between Great Britain and the Continent would consist in its being as free Great Britain and the Continent would consist in its being as free to the public as London Bridge. Practically, for travelling, it would annihilate the waters of the Channel; and, surely, to obtain such a result is worth some sacrifice on the part of the great nations of Europe. Unfortunately, however, they are just now bent on building iron-clads, and in devising means for keeping their own marine monsters afloat while trying to sink those of their neighbours. Thus

monsters afloat while trying to sink those of their neighbours. Thus ploughshares are at a discount, and 80-ton guns at a premium. A comparatively small amount is to be raised for experimental boring, but such experiments will not prove the impossibility of the workings being flooded after tunnelling a few miles. Were the amount expended in building a tube 10 ft. in diameter, protected by a wide outer tube, and were this structure placed on the sea-shore near Dover, and left exposed to the fury of the waves during one winter, the experiment would be far more conclusive than that of boring 500 ft. into the chalk, which may be comparatively dry near the shore. The history of inventions prove, however, that men begin boring 500 ft. into the chalk, which may be comparatively dry near the shore. The history of inventions prove, however, that men begin by the worst plans, and adopt the best after many miserable failures, although the plan finally adopted may have been proposed the first. So, before the submarine railway is built with iron some half a million sterling will be probably expended, only to produce results which had been foreseen, merely because the eminent engineers who had succeeded in gaining the ear of the public were frightened out of their wits at the idea of an untried novelty.

Jersey, Sept. 11.

JOHN DE LA HAYE.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—As many of the Richmond shareholders will doubtless have seen the scurrilous and defamatory article in the Railway News of Saturday last, and as it is calculated to excite uneasiness and distrust in the minds of some by its unwarranted and unjustifiable statements and imputations, I trust you will permit me to say a few words in regard to it. I will not, however, attempt to vie with the writer in the use of language such as is employed in the article words in regard to it. I will not, nowever, attempt to vie with the writer in the use of language such as is employed in the article alluded to, as he appears to be too much of an adept in scurrility and libel, but will simply say to any co-shareholder that the statement in that article are a base and scandalous misrepresentation of facts, and of the true condition of the affairs of the Richmond Company. There is one point, however, on which the writer is entitled to credit—his statement that the Richmond has established itself "a cherater for heige a leasting mine" and I must confess to heige

to credit—his statement that the Richmond has established itself "a character for being a lasting mine," and I must confess to being one of those "dazeld foolish investors" who believe in its permanency, notwithstanding his specious but impotent attempt to show that it is only worthy to be included in the category of "impostors." What the writer of the article means by the "final effort to puff up the shares," and "the collapse," is as difficult to understand as it is inconceivable to him "what connection the financial panic could have with the yield of bullion and the payment of dividends," for the fact is neither the one nor the other. The shares have reached their price on the market from the inherent and intrinsic value of the property, and from that cause alone: and "the collapse" consists in the property, and from that cause alone; and "the collapse" consists in the mine and the works being, as we are officially informed, and which cannot be refuted even by the "intelligent American well acquainted with the Richmond," in a more satisfactory condition than at any previous time. The financial panic at San Francisco has nothing whatever to do with the yield of bullion, and it is the height of absurdity put the matter in any such shape. We are officially informed that the comparatively smaller returns are caused by the sickness of the matter than the same temperature obstance. the men during the hot weather, and by some temporary obstruc-tions with the refining works, and which, from past experience, we are bound to accept as the true cause. Is it fair, therefore—nay, is it honest—to distort the facts and to excite suspicion and distrust among the shareholders for reasons and purposes best known to the writer of the article in the Railway News?

And with regard to "the stoppage of dividends," the official an-

nouncement was that a cable despatch had been received from the company's bullion agent at San Francisco that "during the prevailing crisis dividend must be postponed," which simply means a temporary postponement of the September dividend, whereas we are asked to believe in a permanent cossation of further dividends consequent on the alleged "collapse."

Whilst on the subject of dividend I cannot pass over the effron-

Whilst on the subject of dividend I cannot pass over the effron-Whilst on the subject of dividend I cannot pass over the eiron-tery of the statement that "the company already owed 100,000l., and had arranged to borrow 20,000l. more, to pay punctually the next dividend on Sept. 9, which would have brought up the debt to 120,000l." This can only be looked upon either as a wilful mis-statement, or as the result of gross ignorance on the part of the writer, and if the latter it would be more becoming and better for his reputation if he were to make himself acquainted with his sub-

ject before venturing to give his readers the benefit of his opinion. By a palpable distortion of facts he attempts to make it appet that the company is in "debt" to the extent of 100,000l., and a that the company is in "debt" to the extent of 100,000L, and also "had arranged deliberately to add another 20,000L to the already enormous debt," a misstatement which even the most "dazzled foolish investors" cannot be made to believe. It is generally understood that "a debt" is something which one man owes to another, and that anything "borrowed" is something obtained on credit, and it is the height of misrepresentation to say that such is the case of the Richmond Company. To use the phraseology of the Railway News, "the English of this is very simple," too simple indeed for the writer himself to comprehend.

writer himself to comprehend.

Notwithstanding his pretended desire to enlighten the share-holders as to the so-called "enormous debt," I fear they will fail to appreciate his motives. They are well aware that the bullion produced is consigned to an agent for sale on the company's account, and that payments by the agent to the company are made from time to time as such product is realised, or he is drawn upon against bullion so consigned to him and actually in his hands, and in course of being marketed. Anyone having a knowledge of business principles must know that this is a perfectly legitimate and usual mercantile transaction, and the money thus obtained for the bullion produced cannot by any possibility be considered as a loan on the one hand, or a debt on the other.

Another modest assertion by the writer of the article in the Rail way News is "that it has cost as much to win the ore and make it into bullion as the produce realised." By this I suppose he wishes to convey the impression that the property of the company, apart from the mine itself, has not only been purchased, but the dividends also been paid, either out of capital or the so-called "enormous debt." I would ask whether he is really serious in such a statement in the face of the published accounts of the company, examined and certified by some of the most competent and respectable public accountants in the City of London? To show the falsity of such an assertion it need only be stated that the company has paid 146,650, in dividends, over 55,000. for new buildings, works, and additional properties, and has set aside the sum of 25,000. towards the creation

of a fund for working capital—and all out of net profits.

Although it is unnecessary to say more to show the falsity of the statements, or the absurdity and weakness of the arguments (if arguments they can be called), I will briefly notice one point more. The writer says the Richmond "makes a show of profit by debiting all outlay on the mine to capital, although even a child knows that all outlay should be charged excinst the mine "by which I suppose all outlay should be charged against the mine," by which I suppose he means against the revenue derived from the working of the mine. Although he assumes to be so knowing "a child," himself, I think that what I have already said is a sufficient refutation of his state. that what I have already said is a sufficient refutation of his statements and misrepresentations; and although some of the amounts I have named are under ordinary circumstances fairly and legitimately chargeable to capital, it will be seen that they have been charged to revenue, and, as already stated, paid for out of the net profits of the company.

As to what the writer terms "the large lumps having disappeared," I may mention that I have been a holder of 500 shares for the last four years, and that there are other larger shareholders than myself of equally long standing. I apologise for thus trespassing on your space.—Sept. 15.

[VINDEX,

THE RICHMOND MINING COMPANY.

-Believing as I do that the Richmond Mine is a bona fide valu-SIR,—Believing as I do that the Richmond Mine is a bona fide valuable property, I read with considerable amazement the designation of it as an "imposter" in the Railway News of last week, and I venture to think that such a statement is unwarranted by all the facts, and most unjustifiable towards those who are shareholders in the company. No one can object to fair argument, or the attempt even to distort facts and figures in favour of the view contended for by the writer, but to write a company down as an "imposition," in the writer, but to write a company down as an "imposition" in strong and severe language, without supporting such an assertion by facts, does seem to me a disgrace to any individual or paper, and a very serious responsibility to incur towards those who are holders of the company's shares. Of course, I may be told that if the company is good it does not hurt bona fide shareholders, but to this I simply answer all shareholders cannot have equal confidence in the property, nor are they all equally strong minded (even if they have that confidence) to resist the influence which such writing naturally creates. Others, again, may of necessity have to turn their shares into cash, and therefore do not, or cannot, hold on, and to such an irreparable injury is in all probability due, and for which, if unfounded, the writer ought and should be made responsible.

Is the statement true that the Richmond Mine is an "imposter?" I say emphatically no, and that all facts prove conclusively the contrary, but without going into details the facts I chiefly rely upon in support of my statement are:—

1.—The mine was brought out in August, 1871, and was stated to be, and no doubt was, 3500 feet in length. Since then valuable additions by purchase have been made.

een made.

2.—The prospectus stated that the mine was producing a profit equal to and nonal income of 38,000′. a year, and which profit might be increased to 78,000′.

3.—That the company have smelted as follows:—

						1	Tons.	Pr	oducing.	Av	erage
	Sept. 4, 1872, to Aug. 27, 1873.	1101 ton	s being	purch	ased ores	***	18,225	***	£194,000		\$52
	Aug. 27, 1873, to Sept. 1, 1874	1996	99	9.9	**	***	30,162	***	356,000		50
Į	Sept. 1, 1874, to July 27, 1875	Six mor 389 ton	ths onl s being	y. purch	ased ores	***	18,318		222,000	***	60
	Add for six mont	tal	-) 410 (66,705	***	£772,000		
ı	Aug. 31, 1		\$ 222,0	000					188,000		
l	To	tal							£960,000		

4.—That the 65,000 tons of ore smelted, and producing the large sum of 960,000, sterling, represents but a very small part of the ore in sight, to say nothing about not only the probabilities, but almost positive certainty, of much larger quantities of ore contained in the company's property.

5.—That the company was established upon ore estimated to produce \$40 to the ton, but has gradually improved, until now it is producing \$60 to the ton.

6.—That the lode is now in ore for over 600 ft. in depth, and according to the saccount is going down in ore—and one which continues to improve as greaterdepth is reached, a fact of the highest importance.

7.—That the opinions and statements of Mr. Clarence King and Prof. Price 87, or at all events ought to be, of equal value to that of the writer of the article is the Railway News.

the Railway News.

8.—That Prof. Price actually (as I understand) inspected and reported on the property in the first instance, not for the company, but for some members of the Stock Exchange, who employed and paid him, and I scarcely think that they (having regard to the object they as men of business had in view) would have employed him without knowing something of his capabilities for advising saiding them.

employed him without knowing something of his capabilities for auximoguiding them.

9.—That in common fairness no comparison can be drawn between the Bidmond and the Emma, Flagstaff, Tecoma, and other mines; but that if any comparison is to'be drawn why should it not with equal fairness be drawn between the
Richmond and the mines on the Comstock lode, which have now been working for
over 20 years, and which, at the same depth as the Richmond is now working, the
Richmond, yet one of these mines is now working at a depth of 2000 ft., as is
actually paying 200,000% a month in dividends, or at the rate of 3,600,00%, asystiand, whilst there may not be any fair probability of the Richmond producing sula
a magnificent result, there is, indeed, every reason to believe that the Richmond
will go on producing greater and greater results as greater depth is obtained; as
now that the railroad is so near completion (and which will, doubtless, be of ismense value to the company in very many ways, not necessary to specify hely,
and the refining works are now producing gueh admirable results, there can bes
and the refining works are now producing such admirable results, there can be

will go on producing greater and greater results as greater depth is obtained, now that the railroad is so near completion (and which will, doubtless, so dimmense value to the company in very many ways, not necessary to specify heel, and the refining works are now producing such admirable results, there can be question that a very much larger proportion of the produce of the mines will set it way into the pockets of the shareholders than hitherto, and make the wrise against the mine, though perhaps reluctantly, to admit that the Richmond is truth what it has been and is represented to be, a magnifecent property. Inc.—That the shareholders may rest assured that as the company is a limited company, with no uncalled capital, no bullion agent or banker, either here or is america, would advance 100,000% to the company without they had, certain as absolute security in the shape of bullion, and over which they had, or virtually advance 100,000% to the company without they had, or virtually advanced to the shape of bullion, and over which they had, or virtually a should be shareholders, and over which they had, or virtually a should be the shape of bullion, and over which they had, or virtually a should be the shape of bullion, and over which they had, or virtually another time turn my attention to those points, at the sum time I tinke every candid man must admit that there is mothing extraordinary at the I tinke every candid man must admit that there is mothing extraordinary at the I tinke every candid man must admit that there is mothing extraordinary at rais like his which was prevailing in California in the company being unable to arrange for the remittance of 20,000%, even if they had been financially better that they had are, nor can this in any way affect the value of the property, as a property.

In conclusion, I should his to know from the Editor of the Raulowy Alexa where he feels himself responsible for the article in question, and whether he is perpendiction of the pared to justify it, and give the grounds

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SEPT. 18. 1875.1

Sept. 1875.1

COPPER MINING ON LAKE SUPERIOR.

Sra,—In my letter of Aug. 9 I mentioned seven mines here which declared dividends over and above the assessments paid in. I also named a couple of others which have paid dividends, but have, on the whole, lost money. Last week I gave you a list of those mines which depended wholly upon the stockholders, not having paid any dividends. I now beg to lay before you the loss sustained as a mining district from the commencement (1845) up to the beginning of 1873—

Balance against Lake Superior Mines, all told.... ... \$ 2,000,000

consider it a total or an entire loss, as such explorations go to show the capitalists in future that Lake Superior has its blanks, showing where those blanks are.

Turning, again, to the Calumet and Hecla, I would say that this mine is producing more than two-thirds of all the copper raised in the United States, and pays a larger profit than any single gold, silver, or other mine in the world, and nearly all from stamp rock, yielding an average of not more than 5 per cent., or 100 lbs. to the ton; and this astounding result has been obtained from a location which but a few years since was considered quite as doubtful as a large number of the low-priced copper stocks dealt in at the Stock Exchange. To expect a Calumet and Hecla from many of the other locations upon this mineral range would be, of course, absurd, but to assume that there may not be others quite as rich and productive as the Calumet and Hecla would be equally so.

The great all-important facts are that there are those rich developments here, and that the profits are obtained almost entirely from stamp rock, which a few years since would have been rejected, unless accompanied by masses and barrel-work. Next week I will endeavour to give your readers a few more facts.

A MINER.

Portage Lake, August 22.

THE LIMITED LIABILITY ACTS.

THE LIMITED LIABILITY ACTS.

THE IMMTED LIABILITY ACTS.

THE weak point of the Limited Liability Acts seems to be that if only a few shares are subscribed for directors can proceed to allot. In two companies with which I am connected this has been done. In one they wanted 15,000 shares, 1250 were only applied for; in another 20,000 shares were wanted, only 1800 were taken—yet in both cases the allotments were made. The Act should be amended, giving no authority to allot in the event of less than half the capital asked for being subscribed and instalments duly paid. Had this been the law many, like myself, would not have to feel annoyed with mining operations.

H.

ROCK-BORING MACHINERY.

SIR,—It is announced that Mr. Basset has, with a very praiseworthy liberality, offered 200*l*, as a prize for the best rock-boring machine. Let me suggest that he should offer three prizes—one of 20*l*,, one of 10*l*, and one of 5*l*, to those miners who prove their ability to sink ordrive the most ground in a given time. Rock-drills will, doubtless, work well, but system is required. Twelve months' practice will stimulate much competition, and thus secure success in working.

THE ROCK-DRILL AND HAND-BORING.

Sir,—Referring to an observation made by Major Beaumont at the meeting of the Miners' Association of Cornwall and Devon on Wednesday, to the effect that, in his opinion, no rock-drill could compare in economy with hand-boring, I may be allowed to give an instance of a boring-machine which does not support this view. I had an opportunity a few weeks ago of seeing at work at the Friedrich-segen Mine, near Oberlahnstein, the boring-machine manufactured by Messrs. Dubois et Francois, of Liége. The machine consists of a strong heavy frame, carrying four drills boring four holes at a time. The frame and drills together weigh 95 centner (cwt.) Compressed in is brought down the shaft to the adit level, 45 metres from surface, and conveyed along to the point of operation, 350 metres from shaft, in gas-pipes about 2 in. diameter. The rock being driven in is a moderately soft killas, and holes are bored into it with great speed. The plan adopted is this: The machine having been run forward to the forebreast it is clamped in a simple way to the rails to prevent it receding from its work, and four holes are started and bored simultaneously to a depth of 1 to 1-2 metres; this being done, another set is bored, and this is continued throughout the shift (eight hours), by which time the end is dotted over with some

mother set is bored, and this is continued throughout the shift (eight hours), by which time the end is dotted over with some 22 holes of the average depth above mentioned.

The machine is now run back some fathoms, out of the way of the blasting, and two men, the following shift, devote themselves to blasting the holes and working out the loosened ground. It should be remarked that the centre holes, which are made to point towards each other, are blasted first, thus making a "curb." In the following shift two men and a donkey are employed in tramming the stuff to the shaft. For convenience, the boring is always done at "night core," from 10 p.m. to 6 a.m. The holes, which are charged with dynamite, are exploded two, three, four, &c., at a time, as the men find most convenient, by a small electric machine. A strong current of air which is made to issue from the pipe at various points consecutively along the level soon dissipates the points consecutively along the level soon dissipates the

Now, as to the relative cost of boring with the machine and by hand, I have the following statements from the agents on the mine. They have found that in boring in killas they make twice the speed

worth a thousand of their arguments.

While, however, mainly intending to furnish the particulars of an experiment made by me 35 or 40 years since in Cornwall, and to state the names and residences of the persons engaged therein, I shall preface that statement with a few observations on the philosophy of the subject. It has occasioned me considerable surprise that none of your correspondents have attempted anything like a rational and scientific explanation of the phenomenon. I have long had my own theory respecting it, but until the last week, when I perused "Scrutator's" letter, I have not found a single word in all the correspondence in confirmation of my theory, or, in fact, in support of any theory whatever. If a rational theory can be suggested, and a fact established which supports it, then, I think, in these days, when science has girdled the earth with a wire, and has taught the lightning to repeat our words in every quarter of the globe, scepticism itself will have to give way before the light of de monstration, and men will no longer refuse to believe simply because they cannot explain all the arcana of nature.

lightning to repeat our words in every quarter of the globe, scepticism itself will have to give way before the light of da-nonstration, and men will no longer refuse to believe simply because they cannot explain all the arcana of nature.

Most of the sarcasm seems to have been directed against a poor unoifending hazel twig, which will probably be found, when its action is thoroughly understood, to be in its isolated state as innocent of any proclivity towards minerals, or mineral veins, as a solitary piece of zinc is of affinity with the electric fluid.

I witnessed many years ago Mr. Robert Fox's beautiful experiments on the formation of mineral veins, and the deposit of minerals therein by electricity. The experiments conducted for a long period by Mr. Fox, and for a more extended period—almost alifetime—by Mr. W. Jory Henwood, recently deceased, on the mineral veins of Cornwall, have established the fact that all mineral veins are the great channels and conductors of electricity, and are constantly traversed by that subtle fluid. To this important consideration I shall have again specially to refer.

The correspondence on this subject has established thus much beyond question that but few persons are sufficiently sensitive to use the dowsing rod effectively (always assuming that the thing signified is not the myth or chimera alleged), but that a small number, probably one or two in a hundred, may be qualified.

I will give an instance of different degrees of sensitiveness. I once witnessed in the Polytechnic Hall, at Falmouth, some mesmeric experiments upon ten or twelve boys. Among them was a lad whom I well knew, and who, knowing before he left home what was proposed to be done, declared that they should not put him to sleep. I saw all these boys operated upon; some, I believe, were not affected, but most of them were quietly passed into the mesmeric sleep, and among them the lad referred to—James Mogg. After some experiments on the sleeping subjects the operator restored them one by one, and he then came

posed, would have thought of making a compound of four-fifths poison, or nitrogen—the life destroyer—and only one-fifth of the life-sustaining principle, or oxygen? And now that they are aware of its composition they may affect with equal reason to object to its constituents, and pronounce the precious air a radically bad com-

or a interant-relation the mine, but as the ground in that direction had never been opened we had nothing to guide us.

Mr. Dunstan informed me that there was a capital dowser up at the Church Town, named Jenkin, and if I had any faith in dowsing, or wished it tried, he would get him to go over the ground. I said I had never seen it practised, and knew nothing about it, but that at any rate we would have the man down and try the experiment. This was recordingly did and he commenced on the northern side of a field.

any rate we would have the man down and try the experiment. This we accordingly did, and he commenced on the northern side of a field near the western hedge, upwards of a mile from the mine.

When about half way up the field he suddenly stopped, then walked sidelong a few paces east and west, still keeping his face to the south, then walked backward a pace or two, and then forward again, when he said, "There's a lode here." We instantly cut out a mark in the hedge, and Jenkin re-started upon another section of the field, found a lode, and we cut a turf in the place indicated. Another section of the field was taken and with the like result, and another turf was cut. Beyond the field on the east was the high road, in a cutting of which, on the one hand, the lode could be seen.

as with the same number of men hand-boring, and that the relative cost is as 95 (the machine) to 75 (hand-boring). On the other hand, in boring hard ground, such as grauwacke, the machine bores seven times as fast, and at half the price per metre.

Gunnislake, Sept. 16.

THE DIVINING ROD.

SIR,—I have read all the letters which have recently appeared in the Mining Journal on the subject of the Dowsing Rod, and have endeavoured to pick out from the mass of correspondence the few corroborated facts. It is idle merely to affirm or deny, as many of your correspondents do, the existence of some unexplained force either in the dowser or the rod. The affirmative may be capable of proof; the negative cannot be the subject of such demonstration; hence, though there may be multitudes of unbelievers, one fact is worth a thousand of their arguments.

While, however, mainly intending to furnish the particulars of While, however, mainly intending to furnish the particulars of the cost is as 95 (the machine) to 75 (hand-boring). On the other hand, and as we walked on he suddenly stopped, and again indicated a lode, when Dunstan pointed out to him the lode we had previously discovered. At this distance of time I can state that we sunk three small shafts in the marked places in the field, and in every one found a lode. That was my first and last trial of dowsing.

I am glad to hear "Scrutator" has found so many hematite lodes in his manor, as I am largely interested in what I believe to be the adjoining ground of over 10,000 acres, and I have no doubt that we sunk three small shafts in the marked places in the field, and in every one found a lode. That was my first and last trial of dowsing.

I am glad to hear "Scrutator" has found so many hematite lodes and the field in the lodes and the previously discovered. At this distance of time I can state that we sunk three small shafts in the marked places in the field, and in every one found a lode. That was my first and last trial of dowsing.

I am glad to hear "Scrutator" has found

London, Sept. 14

THE DIVINING ROD.

the expense. I must apologies for the length of this letter, but it had more time I might make it shorter.

THE DIVINING ROD.

SIR,—After the severe castigation that "Scrutator" has administered to "N.B.," and his able exposition of the whole matter relative to the Divining Rod, in which I fully concur, I felt disposed to treat "N.B." with leniency on account of his ignorance, but as he has made incorrect statements concerning myself I am bound in self-defence to state the truth, and, if possible, convert so hardened a sceptic. I am charged with the knowledge (at least) of that most singular and curious instrument the Planchette, which has shown to many the error of their ways, amongst others the late Professor Faraday, who attributed its motion to muscular action—whatever that may be; in fact, it was a puzzle to his learned brains simply because he could not comprehend the first law of our common nature, and next, if he had admitted its teachings, I'm would have made him (as it has thousands) sehamed of his own self-willed opinion. By the description given of it by "N.B." I am certain he never saw one. He states that it was an instrument on three wheels, and those of ivory. Allow me to set him right in this matter, and tell all I know of it. In the year 1860 one was brought from France, hence its modern name, signifying a small thin board. It was shown to me, and I was asked to make them. Aware of the conditions necessary to rightly construct Rutter's magnetoscope, a meeting was called to know the right conditions to be observed in making the Planchette, and the principal one was that no dead matter, such as i vory is, should be used in its construction, and that it should be made of either accia or sandal wood. Other conditions were given which I reserve. Well, I plead guilty to the charge of "N.B.," and confess with much shame that I made them by the gross, and that I hold in my possession letters from those I sold them to, stating that they sometimes wrote when no human hand touched them in open daylight (c

tising legerdemain? I say nothing of its utility, which I fail to see after the most critical examination, because it taught me no new facts, and is but a repetition of old ones long ago authenticated. Far different is it with clairvoyance, which I consider the last remains of prophecy among us, and as such holy, and incapable of being abused by misuse, for then the faculty is lost to the possessors of it, it is taken away from them. All men judge of a thing by its use, and I declare and affirm that by means of my wife's faculty of clairvoyance I have found the absent dead (see Dixon's "Hygenic Clairvoyance") discovered deeds long lost, whereby the, rightful owners recovered their estates, prevented fires and loss by shipwreck, detected kleptomaniacs (commonly called thieves, although rich), cleared the innocent of false charges, and so fixed the guit on the right person; saved lives by prevision, found mines now being worked profitably, and water also; and last, and most important, described and cured the hopelessly sick after every other means had been used without avail, and I ask you, Mr. Editor, if I deserve obloquy, especially when for a trivial sum I offer to teach—by my pamphlet, "Jacob's Rod"—the means whereby any sensible person may do the same, and I declare that I have kept nothing back that I thought useful or instructive, but gave my experience freely to those wishing to learn an art that will yet, like steam, revolutionise the world and open up the vast beds of American coal and minerals, for men will no longer be subject to the swindling mine agents and others who amass large fortunes dishonestly, but will for themselves know the exact value of mining properties. For my part, I am resolved to break up the confederation of rogues and incompetent persons who have rendered mining operations so exceedingly hazardous that no capitalist possessed of common sense will venture his money when there is every danger of losing it; in fact, I will render mining a certain speculation, and again offer to do my of its composition they may affect with equal reason to object to its composition they may affect with equal reason to object to its components, and pronounce the precious air a radically bad component. Now, assuming that there is really such a man as a dowser, and that he carries and uses a forked hazel twig, which, held in his hands in a particular way, bends downwards, or appears to do so on a lode being crossed by him, what is the rational theory regarding them an and the rod, provided on exploring the ground a lode is discovered as indicated by him?

First, that the man is a veritable dowser, made such by Nature, not by art or practice, being electrically more sensitive than most of his fellows. Next that the mineral vein being positively electrical than the unchannelled strate through which the lodes run, as proved by the experiments of Messer, Robert Fox and W. Jory Henwood; the moment the dowser steps on this unseen, but power, ful, current of electricity passing beneath him he becomes not only the prepared conductor of the fluid, but a thoroughly charged reciver, the overflow of which passes through his outstretched hand on to the extended twig, the stom of which receiver the concentrated current, and the circuit is instantly completed by the fluid returning to its source. Is it to be wondered at that the tiny flexible riving should, under the influence of so mighty a force, be deflected by the experiments of Messer, Bobert Fox and W. Jory have a subject to the swinding mineagents and others twig should, under the influence of so mighty a force, be deflected by the experiments of Messer, Bobert Fox and W. Jory have a subject to the swinding mineagents and others twig should, under the influence of so mighty a force, be deflected by the experiments of Messer, Bobert Fox and W. Jory have been deflected by the proper of the first of the proper of

doubts on the subject. With clear brain and studeorn will Fulton completed his grand purpose, and then invited all objectors to a trial trip: he steamed 150 miles, and even then, although they had been positively brought that distance, still they declared that it had not been done by steam (perhaps magic), anything but steam—that was impossible. The result of his discovery has silenced objectors, raised a magnificent steam navy for us Britishers, and rendered us the most rowerful nation (at sea) on earth and as long as we have the most powerful nation (at sea) on earth, and as long as we have mineral wealth we shall remain so, and what more reasonable that we should endeavour to obtain it by the simplest and most easy means. I cannot see why anyone should object to it—indeed in means. I cannot see why anyone should object to it—indeed in 1859 I made an instrument to find mines and springs (which it did); it was but an adaptation of the old hazel rod, and could only be used by a sensitive person, still it demonstrated without doubt that the motion communicated to the pendulum was not due to muscular action, and that was its only value. This I named to Mr. Hunt, of the Geological Museum, at the time, and he advised that I should offer it to the Government, I refused to do so, because I had, and have still, money due on behalf of services rendered in the Crimea, and if I could not obtain my due what guarantee had I of remuneration for any other matter? If, however, any of your correspondents wish to know more of this singular instrument and its construction I am willing to send the particulars.

Grafton-street, Fitzroy-square, Sept. 14.

THOS. WELTON.

THE DIVINING ROD.

SIR,—The amount of evidence brought forward through the Jour SIR,—The amount of evidence brought forward through the Journal from your numerous correspondents in favour of dowsers and dowsing is already, no doubt, sufficiently surprising to some, but I am perfectly satisfied there is still more to come, even when what has been already given shall have been multiplied a thousand times. After what has been already written on this subject it will be impossible, I think, to put it down by ridicule. May as well try to put down the magnetic needle or electric telegraph by ridicule, neither of which being much better understood. To believe in the efficacy of the dowsing rod does not necessarily imply belief in and acceptance of witchcraft or spiritualism, unless we assume that we emcacy of the dowsing rod does not necessarily imply belief in and acceptance of witchcraft or spiritualism, unless we assume that we have already discovered every force and power in Nature, which no observer of Nature can do. No doubt the action of the magnetic needle appears to some minds as connected with witchcraft, as we find recorded in the travels of the justly celebrated Mungo Park that some of the chiefs he met with in Africa so regarded it. It is idle to reject this or that because we do not understand it and if that come of the chiefs he met with in Africa so regarded it. It is idle to reject this or that because we do not understand it, and if that course had been pursued from the earliest age of discovery we should not now have advanced much beyond the state of our fore-fathers in the days when they used flint arrow-head, and had, perhaps, to depend upon such weapons for their subsistence. The evidence brought forward this week seems conclusive, and I do not see how it can be rebutted, unless men are deliberately giving false see how it can be rebutted, unless men are deliberately giving false evidence, which I do not for a moment believe.

I do not profess to understand the action of the downing rod, and,

I do not profess to understand the action of the dowsing rod, and, therefore, to call upon me to explain it, as one of your correspondents has done, is to call for an act of supererogation, it being sufficient for me, if it be established, that it does act in indicating mineral lodes. I think I assisted to some extent in calling attention to its antiquity, but your correspondent, "Scrutator," seems to have more thoroughly studied the matter, both as regards its antiquity and as regards its principle of action, and appears able to throw a flood of light want this to many mines were coult science. I hope he will light upon this, to many minds, very occult science. I hope he will follow up that which he has so ably commenced, for by so doing he will not only teach and enlighten, but embolden many persistent practisers of the dowsing rod to give us the benefit of the many facts they have, no doubt, in store.

Redruth, Sept. 15.

W. TREGAY.

THE DOWSING ROD.

SIR,—Until the present correspondence in the Journal on this sub-ect was commenced I had no faith whatever in its efficacy, but the following circumstances convinced me that it was not so chimerical

Two miners in my employ obtained permission to prospect for minerals in our sett on tribute. Before commencing operations I accompanied them to the spot, and there for the first time saw the dowsing rod employed. At two places it rapidly twisted down, in spite, apparently, of all the resistance the dowser could offer. Being paturally incredules. I took the twice in my own hands determined naturally incredulous, I took the twig in my own hands, determined to prove if it was a fallacy or not; but to my surprise it turned at precisely the same spot. We sunk a pit, and at once came upon a to prove it it was a fallacy or not; but to my surprise it turned at precisely the same spot. We sunk a pit, and at once came upon a small lode. To further substantiate the matter, I got the agent from an adjoining mine, who was more sceptical, if possible, on the subject than I was, to come over and witness it. He, too, tried the rod, and in spite of all his unbelief and protested producing causes, it bent. The next day he had the opportunity of putting it to a practical test. They happened to be costeaning for lodes, and were successful in finding one, seen about 200 fms. further south. He resorted to the dowsing rod, and it indicated the presence of the lode some distance west of their trench; the pit was extended, and the identical lode found. I could add more, but I leave the above unvarnished

lode found. I could add more, but I leave the above unvarnished facts for Mr Spargo or "N. B." to comment on. I might add that your Jersey correspondent is not quite correct in asserting that "it must be a haze!;" a black thorn, or a willow twig, will answer the same purpose, although I do not think they are quite so susceptible to the occult influences which mysteriously affect them.—Isle of Man, Sept. 14.

J. B.

GOLD IN WALES-No. IV.

THE FAULTS OF THE DOLGELLY GOLD DISTRICT.

MR. SALTER'S REPORT.

The range of country to which these notes refer is a few miles north, west, and north-west of Dolgelly. It comprehends the upper part of the Lower Cambrian, or Lingula flags, which range all along the Barmouth estuary, and thence northwards to Festiniog. The gold district is only known at present from Barmouth to the hills, about eight miles north of Dolgelly, but there is every reason to believe, from the structure of the country that it even for the prothward.

from the structure of the country, that it extends further northward 1.—The BARMOUTH, or HARLECH rocks (a), of Prof. Sedgwick form an oval mass several miles in diameter, and range, on the whole from south-west to north-east. There are in this mass comparatively few undulations of consequence which affect the eastern and south-eastern borders. There is one exception to this in the long tongue of the "Lingula flags," which run up from Barmouth to Llawllech; I believe this to be complicated by the faults presently to be mentioned. With this exception, however, the dip is pretty regular all round the district heing at rather a low angle of shout 30% seldom tioned. With this exception, however, the dip is pretty regular all round the district, being at rather a low angle of about 30°, seldom much steeper (except accidentally in the neighbourhood of faults), and sometimes at a much lower angle. The whole series of these rocks consist of a very hard (often coarse) sandstone, with beds of purple slate, which occur chiefly in the middle and lower portion of the series. But the Upper Sandstone beds are frequently interstratified with bands of green slate, which distinguish it readily from the overlying formation: the overlying formation:—
THE LINGULA FLAGS, OR UPPER CAMBRIAN (2—4, b to f).

THE LINGULA FLAGS, OR UPPER CAMBRIAN (2—4, b to f).—This is a triple formation, measuring about 6000 or 7000 ft, in thickness, according to Prof. Ramsay's latest observations; it has been divided by my own research into a lower group of black slate and trappean shale, a middle group of sandstone, and a thin upper group of very black shale, which in North Wales is rich in fossils.

Of these formations, we have only to deal with the lower, for in that only at present are the gold veins worked in this district.* Indeed, it is at the junction of this formation with the underlying Cambrian grite that the principal bearing lodes are found. Numerous trappean beds, felspathic lava-beds, and layers and thick masses of volcanic ash are interstratified with these—indeed, so thickly that volcanic ash are interstratified with these—indeed, so thickly that more than half of the formation may be said to be made up of them. They have chiefly been coloured as "greenstones" in the maps of the Geological Survey; but this is an error, as they are not intrusive, and are besides true felspathic beds, often pure, but sometimes mixed with grit and sandstone, and occasionally, especially near the base of the formation, chloritic, and so green that they may have been readily mistaken for the greenstones, which only rarely pierce them.

Section No. 1 will give a general idea of the succession of the beds

section No. 1 will give a general idea of the succession of the beds along the line I have indicated, omitting minor details—a is the Coarse Upper Cambrian rock; b to e, Lower Lingula flags; f, Middle Lingula flags; g, Upper Lingula flag (black slate).
2.—Lower Lingula flag is much thicker than the middle division, and this than the upper.
The ascending section through the lower division, b to e, is as follows. (See section 1):—

(See section 1):--First and lowest: Camlan Black Shales: (b) Black slates or b.—First and lowest: Camian Black Shales: (b) Black slates or shales, with several bands of contemporaneous felspathic trap. These are seen along the whole border of the lower Cambrian grits, from the Llawllech and Clogau to Moel Gwynfynydd. They pass up into c, a thick series of very hard rocks—the Mawddach hornstones (c), which are so named because exposed in every possible variety of section along the Mawddach, from Dol-y-melynen to the falls. They form the steep brows of Cwmhesian Woods, where in the steep gorge of a small wraterfall the whole section is seen and consists of a great of a small waterfall the whole section is seen, and consists of a gr

* But the gold is not confined to these lower members, for the productive m at Carn Dochau is in much higher rocks.

Variety of trappean (felspar rocks), interbedded with fine sandstone and horny slate of so hard a texture as to resist any amount of weathering. Many beds of siliceous rocks are full of felspathic lines; others with cinders or lumps of felspathic matter. Occasionally the beds are fine grit, cemented by felspath then felspar rocks, with very little other matter. Striped hard slates of a light colour, and chiefly felspathic, occur at the base, middle, and near the upper part, and such are well seen along the river, near Tyddynglwadis, and in the mine level itself, and especially at the steep eastern cliff overlooking Pietil-y-Cain. The grit beds in this series occasionally, as by Rhaidr Mawddach, resemble so closely the uppermost beds of the lower Cambrian as to be very easily mistaken for them. And their position only above, instead of below, the black slates (a), alone enables us to decide on them. They have, however, a wax-like horny aspect, us to decide on them. They have, however, a wax-like horny aspect, which the experienced eye will detect; and I was often indebted to the acumen and friendly aid of Capt. E. Williamson, who has had charge of the Tyddyngl wadis Mine, in disentangling these rocks from the lower Cambrian grits, faulted as they are in close proximity to them. The river sections south of the falls are a perfect geological puzzle. Sometimes, though rarely, the trap is seen piercing the beds of volcanic ashes, and overflowing them. But all these felspar beds are truly contemporaneous with the hard slate and sandstone among

which they lie. which they lie.

*.—Above these, and seen only at a few places in consequence of the many faults, are a series of black shales, striped by volcanic ashy layers. They occur opposite the level of the Cwmbesian lead lode, and again a little below Cae-gwernog, in Cwm-gwnin, where they are overlaid by a conspicuous series of hard rocks:—

are overland by a conspicuous series of hard rocks:— d.—The Cwmhesian flags, a thick series of hard flagstones and striped slates, chiefly thin-bedded, and containing many hundred layers of felspathic rock, from $\frac{1}{2}$ in. to many feet or yards in thickness. The series are well developed along the Upper Mawddach, above the falls, and occupies all the high ground of Cwmhesian, ranging by the west flank of Moel Hafod Owen, the woods of Pigsweh and Dolgoed, and crossing the river below Dol-y-melynen, above Tyn-y-gross, where they may heat he studied; they recomble in all

ranging by the west flank of Moel Halod Owen, the woods of Pigswich and Dolgoed, and crossing the river below Dol-y-melynen, above Tyn-y-groes, where they may best be studied; they resemble in all respects the middle lingula flags, which lie hundreds of feet above them, being thin flags, with rippled surfaces, covered with annelide trails, and of a peculiar flaky character, as long ago observed by Prof. Sedgwick, who alone has given a true description of these lower lingula flags strata.—(See "Quarterly Geological Journal.")

e.—Dolfrwynog Beds: Dark grey or blackish slate, with minutely wavy lines of hard ashy sandstone, and with many cubes of pyrites; it breaks into rhomboid masses, and is interstratified with beds of felspar trap and ashy beds. There are also intrusive beds of similar trap—i.e., the trap being contemporaneous, often shows itself as an intrusive mass, and then spreads out in flat beds, which are truly interstratified. There are greenstones also, but these are rare; these beds occupy all the high ground of Moel Ispri and Brynianglo. They are overlaid by a softer series:—

e*.—Llaneltyd Slate: Blackish-grey slate, striped minutely, as above mentioned, with ashy lines, in which the kaolin or decomposed felspar occurs in large-sized grains. Large cubes of pyrites occur throughout. The rock peels up in thin flaky beds, and also breaks up into rhomboid masses, which stand the weather pretty well. Such rock extends from the plantations above Llaneltyd all the way to Brynianglo, and in its lower part contains fragments of trilohites, probably Connectables. Being without trap heds this

the way to Brynianglo, and in its lower part contains fragments of trilobites, probably *Conocephalus*. Being without trap beds, this series forms lower hills, and is much broken by the faults presently to be described.

to be described.

3.—MIDDLE LINGULA FLAGS: Hard sandstone beds, flat, and rippled strongly on the surfaces. The beds are of various thickness, but are all hard flaky sandstone, flaky hard grey slate, extremely durable, and composed largely of felspathic matter. This is the base of an immense series, which occupies most of the eastern and southern sides of the Mawddach river, and forms the first range of hills, which was the Calculations of the Mawddach river. underlie the Cader Idris range. Lingulella Davisii is the common fossil, and Hymenocaris more rare. The flags range by Cefn Mawr and Glynder, and by Moel Hafod Owen, on the upper forks of the

-UPPER LINGULA FLAG: This black slate shows on the base of Cader Idris, but does not occur in the district we are considering.

It is followed in North Wales by—

5.—The TREMADOC SLATE, not yet known in the Dolgelly district,

but confidently to be looked for in Cader Idris.

6.—The Arenig or Skiddaw group of porphyries and slates, which form the crest of Cader Idris, and range round by the Bala road to Arran Fowddwy and Arenig, the mountain from which the name was bestowed by Prof. Sedgwick.

FAULTS AND DISLOCATIONS.

The district is cut up in all directions by four sets of faults, of various degrees of importance, which we may classify in the following manner. Much of the following information has not yet appeared in any published work, and these faults, the study of which I suggested to Mr. Readwin, are of the greatest importance in a

mining point of view. It is in the faults or fissures of the earth's crust that mineral matter has been deposited. A district free from faults is of necessity poor in minerals. And the course of these faults, their direction, the accidents to which they are subject, the direction in which they are thrown by other faults (slides, cross-courses, &c.), is the chief subject of anxiety to the practical miner. Every practical miner and mine surveyor should, therefore, be a geologist. He should have a clear and definite knowledge of the strutification and succession of the beds of the district under his care, and of the dislocations to which it has been subject. And if he attains this he will no longer be misled by mere surface appearances, nor mislead his employers at the extent to which operations may be carried in a given disbe misted by mere surface appearances, nor misted his employers as to the extent to which operations may be carried in a given direction. Nor will he follow mere superficial strings and courses because the main fault, which may be far richer in the ore he is searching for, is covered up by valley accumulations, or concealed by rivers, lakes, or swamps, which often, though not always, lie in the direction of such main fissures. Hence, if by a study of the geological structure of a district we can arrive at the main direction and actual locality of the principal faults we shall avoid these two and actual locality of the principal faults we shall avoid these two errors—the first, search in unprofitable directions; the second, neg-lect of the hidden riches concealed from view by the causes above

referred to.

A district should be first carefully surveyed without an immediate reference to perticular veins or threads of ore, and then, the relations of known lodes being ascertained with respect to the main lines of disturbance, a fair estimate may be made as to the profit or loss of undertaking the more practical search along such and such lines. Moreover, as it has been clearly ascertained that in many districts ores of a certain character are found to range in particular directions, while others occupy beds in another and different compass-bearing, it is obvious that the frequency or fawness of either of these lines it is obvious that the frequency or fewness of either of these lines of fissure will determine the speculator as to what undertakings will be the more profitable in any given spot. It is not enough to know that gold is found in association with zine and copper, while lead and silver veins show only traces of it, or that tin exists in lodes and silver veins show only traces of it, or that tin exists in lodes with certain minerals, while copper mines are associated with other

and different metals. What is wanted is to know the mean direction in which it is prowhat is wanted is to know the mean direction in which it is profitable to search for either in any locality, and also which is anterior to the other in point of age; and, therefore, which will be the disturbed and which the disturbing line of fracture. Whether the one series is abundant, and the other accidental in the district, and whether when we have with the content of hidden the profitable and the profit ther, when we meet with cross-courses or slides, the precious ore is to be searched for right or left, and how far in either direction. The to be searched for right or left, and now tar in either direction. The loss of money, time, and temper in driving useless levels to search for that which the study of the surface would give us easily, and without anxiety, should surely be reckoned as a loss so great that no time should be wasted in undertaking accurate surface explorations. If the tin and copper lodes of Cornwall are found mainly to lie in different direction as, and the one to be anterior to the other thrown by it—we may expect to come to similar conclusions with respect to lead, zinc, copper, silver, and gold in regions where these abound. It is the preliminary work alone that I have undertaken to do, and as in the district under review the faults are entirely omitted in the Ordnance Map, while in the neighbouring mountain

ranges, which are not known to be auriferous, some of the main fractures are laid down, the contribution will not be deemed of trifling importance for the district. The true, not the magnetic, bearings are given, and these only within a degree or two, for it was found that, except in surveying a particular mine-work, minute accuracy as to bearing was utterly useless. The sets of faults are not strictly parallel, but only approximately so.

Linerpool. Sept. 15.

T. A. READWIN, F.G.S.

THE GOLD COMPANY, WALES.

SIR,—I write you these few lines to see if by your influence it be not possible to raise the sum of some 4000% or 5000% to make the company mentioned above into a good paying concern. I see by the Court Journal of last week (I have been away lately, but presume it was copied from some other paper, perhaps your own, which I have not yet seen) that the Clogau Mine, which undoubtedly is part of the same lode, returned the week before last 45 ozs. of gold, and I hear (though I cannot yet youch for the truth) that last week part of the same lode, returned the week before last 45 ozs. of gold, and I hear (though I cannot yet vouch for the truth) that last week's return is 80 ozs. Now, probably only a few of your readers know why the Clogau is good and the Gold Company bad. The cause is coal and water. At the Clogau the machinery is worked by water, at the Gold by coal. The ascent to the mill at the latter mine is something terrible, so terrible that it is now admitted to be utterly impossible for horses to take up the necessary amount, for farmers will no longer lend their cattle, and it would require a stud of at least 20 (costing some 1500/. to 2000/. first-hand) to ensure sufficient supplies, whilst even then I am convinced many or all would see. supplies, whilst even then I am convinced many or all would succumb after a few weeks such hard work. It is almost like getting up the Monument.

But, Sir, an expenditure of some 2000l. to 3000l. in a tram would obviate all these difficulties, and make the property a very valuable. With permission obtained from the owners of the land a very few weeks would start the concern, and the mill could be kept running night and day. Perhaps 200% or so would be required in addition to double the capacities of reservoir. It is admitted by all here that the two late managers have done their very best in working the concern, but how was it possible ever to make the thing pay with scarcely half a ton of coal received per diem, and even this scanty supply not to be relied upon? Why, of course the mill pay with scarcely half a ton of coal received per chem, and even this scanty supply not to be relied upon? Why, of course the mill could only be run spasmodically, and failure must have resulted. There is plenty of money in London just now. Let shareholders take heart, then, and subscribe the necessary funds for a tram. Then I venture to predict their stock will equal in value those of other I venture to predict their stock will equal in value those of oth more fortunate companies. A Well Wisher to the Gold Co. Dolgelly, Sept. 13.

SILVER-LEAD AND BLENDE MINING-THE LLANDILO DISTRICT.

SIR,-Any one interested will find, on carefully looking up the

SILVER-LEAD AND BLENDE MINING—THE LLANDILO

DISTRICT.

SIR,—Any one interested will find, on carefully looking up the mining statistics of Cardiganshire and Carmarthenshire, that where operations have been carried on with energy, and capital directed into proper channels, there has been but few failures; and the mines, when under proper guidance, have been more cheaply developed, have proved more permanent, and given greater profits on the amount of capital expended, than any in the kingdom; and as yet they are only in their infancy.

Railway enterprise has opened cheap and easy access to the districts where the treasures ile, and immediate communication with the smeller labour in the two counties is abundant and cheap; and the outcrop of the veia are such as to give sure indications to the practical miner where to work successfully (which is more than can be said for the "downing.rod"), as there is not a paying mine in the district but has clearly indicated its presence at surface. In our to that a great many thousands have been spent by "Theoretical Miners," who have haid down imaginary lodes where Nature never directed them (by-the-way), one of your correspondents appears to have found a nest of them in the Emend Inle), or they have ignorantly or designedly sacrificed good mines for their own immediate gain. In most instances, they are found to use the downing rod, or magic wand, to draw the money from the unsuspecting, and the influence, whether animal magnetism or complicity, has caused the current to flow into their own pockets, to the great injury of legitimate mining and miners. But there is not the slightest necessity for the intending investor to be misled by anything so glaring or so filmsy. If he will take train from London or elsewhere to Llandovery, be will find thinself in the neighbourhood of the old Manty-Mwyn Mine, which is aid to have yielded profits for the past 300 years; and judging from the outcrop of the different veins, and the disclosures in the exavarations, there certainly appear no

THE NASCENT COPPER PROCESS.

SIR,-With your permission, I will briefly reply to your nume

SIR,—With your permission, I will briefly reply to your numerous correspondents on this subject.

"C. E."—If this gentleman will refer to a letter which appeared in the Journal nearly a year ago, he will find an account of the features which effectually distinguish the Nascent Copper Process from Henderson's, Claudet's, Selwyn's, or any other wet method of artraction. As regards the extraction of silver from argentiferous copper precipitate, "C. E." must surely know that there are several methods of doing this in ordinary use by copper smelters, and he ought also to know that such precipitate is an ordinary merchantible article as regards both its copper and silver contents. Thave already ought also to know that such precipitate is an ordinary inerchange article as regards both its copper and silver contents. I have already stated that the cost of treatment by the Nascent Copper Process in Cornwall need not exceed 16s. per ton, and, indeed, it may readily be kept under 12s. I was surprised, therefore, to find "C. E." stating that the other wet methods now in use cost as much as 22s ing that the other wet methods now in use cost as much as 22s to 23s, per ton, even when 'cheap coals, iron, salt, &c., are obtained. So, too, with respect to ore of the grade suggested by "C. E."—on containing 1 per cent. of copper and 4 oz. of silver—I am surprised containing 1 per cent. of copper and 4 oz. of silver—I am surprised to find the question asked whether the Nascent Copper Process would pay for cost of mining as well as for treatment. Under orthogonal nary circumstances the cost of mining alone would more than equal the total contents of the ore, as "C. E." ought to know if, as is to be presumed, he be at all acquainted with mining. Where, howers, such ore is already at surface, or where it can be worked with richer parts of a lode, so as to bring up the whole to a sufficient average, then I should have no hesitation in advising the adoption of the

"Subscriber."—Out of the 17 mines in which "Subscriber" has itvested probably some could be worked to advantage by Copper Process, and could be worked to advantage by the Association of the whole seventeen. This result could be accomplished by "Subscriber" and his fellow-shareholders joining the Metal Trust. "Caution."—Solvitur ambulando! What "Caution" says cample done is heine dans.

"Caution."—Solvitur ambulando! What "Caution" says
be done is being done.

"Practical."—This gentleman is quite right in stating that the
average yield of tinatone is not 45 lbs. to the ton, but he is wrong
in asserting that large quantities of ore containing 1 per cent. of
copper and 4 ozs. of silver to the ton are not to be found. "Caution"
himself acknowledges this, so I will leave "Practical" and "Caution" is dight the question out

"One of the Question out.

"One of the Virtuous Lady Shareholders."—The question of this gentleman is addressed to Mr. Barnard, who is perfectly well able to answer for himself. I may, however, be permitted to meating

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hat I did not read Mr. Barnard's letter to mean that ore containing to little as 1 per cent. of copper and 4 ozs. of silver can be treated to as to cover costs of mining, in addition to those of treatment. "Faith."—Trust and Faith are practically synonymous terms. "Faith" would like to regain the money he has lost in mining. Let him join the Metal Trust, and thus invest his money on the security the lidings, machinery. &c., while at the same time he is entitled.

Faith would have to regain the money he has fost in mining. Let' him join the Metal Trust, and thus invest his money on the security of buildings, machinery, &c., while at the same time he is entitled to profits on more than an ordinary mining scale.

"Index."—The size of the burrows near Hole's Hole is a matter of ocular evidence. Their yield in silver is given on the authority of Capt. W. Knott, and others who have assayed numerous samples that years.

of late years.

I observe you state in another part of the Journal that the Bampfylde Mining Company have entered into arrangements with me for the treatment of their ores. I am happy to say that this is so, and I congratulate the shareholders upon the increase which this has effected in the intrinsic value of their shares.

STEPHEN H. EXMENSE

8, Union-court, Old Broad-street, E.C., Sept. 16.

THE NASCENT COPPER PROCESS.

THE NASCENT COPPER PROCESS.

SIB,—Your correspondent, "C. E.," seems to have got into a very heavy fog in the use and meaning of the word "calcination." As per his letter in last week's Journal, he says—"The calcined ore is then mixed with sulphur and again calcined, converting the silver and copper into soluble chlorides, and condensing the fumes from the second calcination into H. Cl." Now, would any person with an ordinary amount of knowledge expect to convert sulphides into chlorides by simple calcination (as your correspondent will have it) with sulphur? I think if "C. E." will again refer to the specification of this or any other patent treating of the same matter he will find that chlorine, generated by heat or otherwise, is associated with the ores, proving the conversion of the same, and, referring more particularly to the Nascent Process, "C. E." will learn that ores containing arsenic, copper, &c., are firstly roasted in the stone, and the fumes condensed; secondly, ground to a small size; and, thirdly, that chloride of sodium to the extent of some 10 per cent. (or thereshouts, according to the richness of the ore) is mixed with the same, and introduced into the furnace for the last time. The summary of the whole process is given in very few words:—Calcining in the stone to expel arsenic; grinding the burnt ore to convenient size for chlorodising; chlorodising with salt, and not with sulphur, as your correspondent evidently believes is done; lixiviating with brine, and the precipitation of the copper, &c., with iron. The other questions raised by "C. E." I leave for those connected with the process to answer.—Sept. 14.

MINING INVESTMENT, AND MINING SPECULATION.

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MINING INVESTMENT, AND MINING SPECULATION.

SIR,—Your correspondent who wrote the letter in the Supplement to last week's Journal under the above heading, and signed himself "An Old Miner," should have enumerated such mines as West Maria and Fortescue, Rosewall Hill, Bedford United, and many others I could name. West Maria and Fortescue is selling for about 40000., which is about the value of the machinery and materials. The mine will at present pay its cost, and will soon be made to pay a profit, independently of any new discovery; therefore, it ought to be selling at about 12,0000. or 15,0000. I may add here that this is a good property, for it adjoins Devon Great Consols on the west, and has its lodes running through it. Rosewall Hill is selling at present for about 10000., and I need not make any other remark here than just to say that everybody knows, or ought to know, that this is not a tenth of its value. Bedford United is selling at present from some cause or other for the paltry sum of about 9000. or 10,0002. This mine has ceased to make calls, and at their last meeting there was a balance in favour of the company on the four months' working of about 4000. and at their next meeting, which I suppose will take place in about two months' time, I have no doubt they will declare a dividend. I hear there is a very fine lode gone down in the bottom level to the next one the north and south lodes are expected to form a junction, at which point they fully expect a very rich course of ore. If a change in the price of shares in any one of these mines should take place, it must be for the better.

WHEAL OWLES—LEGITIMATE MINING.

WHEAL OWLES-LEGITIMATE MINING.

WHEAL OWLES—LEGITIMATE MINING.

SIR,—I attended the last account-day at Wheal Owles, and was pleased to find the owners, who are usually most active in attendance, with their faces more than usually beaming. Capt. Boyns has worked hard for five years in developing new ground, and the owners have backed him in sinking two new shafts on the cliff, very near each other (Wheal Edward and West Wheal Owles), and it is in the latter that the discovery of such excellent promise has been made. Too little time has elapsed yet to know its value, but Capt. Boyns, who is no enthusiast, contends that he never had such afind in his long experience. There is a large adverse balance on the books against us, but all present considered the stock of tin on hand even at present price will pay all off. I regard all the outlay as well spent. In 1872-3, in place of huge dividends, one-half profit was going in new work. In April, 1874, 12,000/. had been sunk in new engines and labour. This is legitimate mining. And all this new work is within a stone's throw of Bottallack, on the fringe of the Cliff ground.—Sept. 15.

CORNISH MINING—WHEAL OWLES.

CORNISH MINING-WHEAL OWLES.

CORNISH MINING—WHEAL OWLES.

SIR,—The times are advancing towards improved values of mining properties, the most remarkable change in your price list being the old Wheal Owles, twin brother to Botallack, only a narrow rift dividing these great concerns in their work. The last meeting of adventurers, held on Aug. 27, was only briefly reported in the Journal, although it was in the eyes of the owners one of the most important account-days in the history of that very old bal. Mr. Spargo, in his excellent compilation, 1868, of the "Mining Statistics of Cornwall and Devon," spoke of Wheal Owles and its spirited management descring better luck than had then reached it. Since that sketch was written Cornish mining properties have passed through a trying spasm. After a couple of years of unparalleled success, bringing with it the mania for new schemes, the reverse has been witnessed with its disastrous result in every nook and corner where tin and copper were sought after.

with it the mania for new schemes, the reverse has been witnessed with its disastrous result in every nook and corner where tin and copper were sought after.

The manager of the Wheal Owles I take to be of the late Duke of Wellington's stamp, one that "stands four-square to all the winds that blow"—he is of the old stamp, shivering against the modern encroachment of shares divided into such threads worth a cigar a piece. The share register, once of 20 parts, is now in 80 shares. During the last five years dividends were paid of 5640., of which 2500. have been repaid in calls in 1874 and 1875; but the greatest reserve of wealth remains to be spoken of, for while many market mines were bleeding themselves to death to appear large in print Capt. Boyns was re-investing thousands of capital in new schemes, which at the August meeting he felt proud to announce to his adventurers were likely very soon to reward his enterprise. In the month of June the first sound of fresh life came; day by day since then the shares, which were dead at 501. to 601. each, have strengthened until we read them in your columns at 2001. each. Captain Boyns ralues the new discovery as the greatest in his experience of 40 years. But what is 16,0001. for the mine? Very trumpery concerns, paying no dividends, with little appearance of ever doing so, with no machinery worthy the name of such, when placed in the scale with Wheal Owles, could have a market value of 20,0001. to 30,0001. Marke Valley, at 31. each, runs up to 27,0001.; Wheal Owles, 80 shares at 2001., is 16,0002. The new discovery has been cut under the sea, and it would be singular to find this company outstripping the farfamed Botallack.

Mr. Richard Thomas at the meeting raised the question of dividing the shares, to make them a more marketable property, but no notice of motion having been given the discussion of the point was not entered into greatly, Mr. Elliot, a stranger to Cornwall, having supported Mr. Thomas's suggestion. Most likely when this change lakes place, as it must

step in the modern forms of commercial existence, and become a "limited" company, and bid farewell to the Cost-book System, a system little beloved by some.

These few notes of the improved value of Wheal Owles—or more strictly speaking West Wheal Owles—are the legitimate due to the current of information, a current that for two years or so has had no attraction. To the reflective it is a marvel that all the bounding enthusiasm of 1871, 1872, and 1873 could quit Devon and Cornwall, and leave the inhabitants to dwell more on the vegetable produce than the mineral output for their future out-look. Yet from one mine what wealth is made to circulate! Wheal Owles, now working in a creek of the headlands of St. Just, spending more than 8000% a year in labour cost. In 1872 the labour cost exceeded 12,000% a-year. The Cargodna lode remains to be further explored before staking one's existence upon it turning out the first mine in the Duchy of 1875, but the fault is not with Captain Boyns if all the money spent since 1870 has been spent in vain. A month hence much more will be known, but in the meantime one discovery should not be kept back, when but a short time ago every paragraph of the Journal was a discovery.—Sept. 14.

SOUTH CARADON MINE-MANAGEMENT.

SOUTH CARADON MINE—MANAGEMENT.

SIR.—Having attended our three-monthly meeting at South Caradon Mine, on Sept. 7, I was somewhat surprised to find so many in attendance, and being one of the adventurers in the mine for many years past, I thought a few suggestions in regard to the working of the mine, and the agency, might be discussed with advantage in your valuable Journal, if you would kindly insert the same in the next issue. A great portion of South Caradon adventurers are somewhat addicted to fault-finding in regard to so many agents being employed on the mine, and sorry am I to say, with due justice to each party or parties concerned that the question is never fairly discussed, owing to a one-sided clique premeditated beforehand. In fact, I have no desire to mention names, but I generally notice a Cornish mining engineer in attendance whose remarks are only appreciated by a few, and knowing that his interest in the mine is comparatively small, in comparation to many others who remain in profound silence, I certainly think his pretended flattery and eulogy in regard to the management and working of the mine is quite unnecessary and uncalled for. It is the prevailing opinion of many of the adventurers that we are overstocked with agents, and I must certainly admit that I am of the same opinion, taking into consideration the newly-erected man-engine they have to go up and down in their shafts. The idea of a manager and four underground agents to look after 350 men and boys employed underground is quite pre-posterous. I remember, not many years ago, when the mine was more extensively worked than at present, taking into consideration the north part of the mine, which is at present nearly abandoned, owing to the lack of tributers, that three agents used to do the work underground, and weigh a great portion of the ore in addition.

There is another great feature to which I wish to call the attention of South Caradon adventurers—that the mine ought to be more extensively worked on tribute. As South Caradon is a m

ECONOMY IN MINE MANAGEMENT.

ECONOMY IN MINE MANAGEMENT.

SIR,—For some time past the great desideratum in Cornwall has been economy, and everyone's mind has been taxed to devise improvements with a view to economy in all departments of mining. With regard to the underground operations of mining, it is very difficult to draw a hard and fast line of demarcation or distinction between a judicious curtailment of the scope of the workings and the undue stoppage of explorations, and a consequent unfairness in the working of a mine. Where many cross-cuts in untried ground are stopped there must also be, as a consequence of such stoppage, a falling off in the value of the mine as a speculation, and at the present day Cornish mining exists only as a speculation.

Not a few of the disastrous abandonments we have had in mining during the last two years have been owing to the blindfold policy—or rather absence of policy—displayed by the management in working out old discoveries, instead of finding new deposits of mineral to keep up a regular supply. It is, therefore, of the utmost importance that the investor should look at the reports before laying out his money, in order to see how much cross-cutting and general exploration are being carried out with a view to further discoveries at a deeper level. Many agents do not report the "stopes," or the stripping down of a lode already discovered, and we think there is wise policy in this, because one can easily judge of the value of a mine from the value and number of the ends. Economy in underground work is vitally important, and during this last depression many mines have been worked almost wholly upon tribute. However desirable this may be, we think that if it is pursued to a very great extent it will result in ultimate failure, for tributers must pick out the eyes of a mine.

The surface operations present, however, a much wider scope for the curtailment of expenditure, and one of the most valuable arti-

pick out the eyes of a mine.

The surface operations present, however, a much wider scope for the curtailment of expenditure, and one of the most valuable articles of consumption is coal; and the question has again and again been propounded—What is the cheapest fuel? No one can doubt that Cornish coal consumers are not enterprising enough to buy from the collieries first hand and wholesale. The wholesale customer gets a low quotation and liberal discount, but in Cornwall the customer buys by the bare ton, and at a high rate. Why is this? We feel bound to state that the reason is because of a monopoly of merchants, because there is no fair competition, but all is done by undue influence. A mining merchant who owns shares in any mine comes forward and demands orders: if they are not given him he threatens, and does not confine himself to threats often.

threatens, and does not confine himself to threats often.

Some time ago Mr. Rule endeavoured to cheapen coal by introducing Scotch coal, but his endeavours were unsuccessful, owing to influence. Capt. Teague stated some time ago that Tincroft Mine paid 17s. per ton for coal: neighbouring mines are paying 18s. or more for the same kind of coal. This shows that something might be done in the way of economy in the coal department. It is a pity that Cornish people do not import their own coal, and keep winter stocks. The amount of ignorance of the coal trade displayed in Cornwall is remarkable. People do not know the difference between coal and slack, and a mixture of the two quite satisfies them. They are forced to take coal that has lain at the pit's mouth and on

a great saving; and why should this not be done also in Cornwall? Good Scotch coal could be obtained in Cornwall at 16s. or 17s. per ton by hired steamer, and an experiment with it would be well worth while.—Sept. 15.

EXPERIMENTIA DOCET.

WEST CHIVERTON-MANAGEMENT.

WEST CHIVERTON—MANAGEMENT.

SIR,—Some remarks on this mine in the West Briton of Tuesday are only amusing to those who, like myself, are acquainted with the facts of the case, and I will thank you if you would kindly allow me space in your valuable Journal to make a few remarks thereon for the information of others. Having been a shareholder in the mine for many years, as may naturally be expected, since the change in management I have been quietly watching the moves of the manager, and find the remarks in the West Briton to be in error. In the first place, it is not the price of blende that has gone so much in his favour, but the vigorous way it has been raised and prepared for the market, and that too from places which were pool-poohed by all the former party, who said they could not be worked except at a loss; and I also find in 1873 the blende fetched as much as \$\tilde{L}\$. Its, err ton, whilst the highest figure reached during the past nine months has not exceeded \$\tilde{L}\$. If, as, and that for only one sale, whilst many others have been so low as \$\tilde{L}\$. 18s, and 11. 10s. In the second place, so far as I can judge (and I have no little experience of mining), the only form in which the pruning-knife has been brought to play—but not with the vengeance represented—is on the merchants, and those men who are found worthless in any mine, for I have been credibly informed, and I can state without the slightest fear of contradiction, that the average earnings of the men will compare favourably with the best mines in the county. In conclusion, Capt. Southey has more than fulfilled his promises, and I am proud to know that he can see his way clear to pay another 7s. 6d. dividend without impoverishing the mine, and I consider him a sound practical miner, fully competent to conduct even a larger mine than this without the aid of a coadjutor.

A Cornish Shareholder.

Truro, Sept. 16.

WHEAL UNY.

WHEAL UNY.

SIR,—Allow me to protest against the conduct of the committee, secretary, or general meeting, which was attended by the noble Chairman and secretary only. Whether the Chairman holds one or five shares I leave to the adventurers to find out. There are chairmen who qualify for such duties by holding not a great interest, but the least possible. Now, Sir, at the said meeting the services of the engineers were dispensed with, after 20 years' service. For what? No cause is assigned. We have a manager at the mine who attends, or should attend, to the duties of three other mines. The manager's 1 fso, it requires that he should be on the mine, and not occupied in attending to other duties. Had I been in town, I intended to propose the following resolution at the last general meeting, and hope that at the next sufficient shareholders will awake to their own interests to attend—"That Capt. Rich be desired to devote his whole services to the mine, or relinquish his post." With a committee and body of shareholders asleep to their own interests it is not surprising that Wheal Uny should drag the money out of shareholders' pockets.

[For remainder of Original Correspondence, see to day's Journal.]

Meetings of Bublic Companies.

WYE VALLEY LEAD MINING COMPANY.

The second general meeting of shareholders was held at the Cannon-street Hotel, on Monday,—Mr. J. B. Tippetts in the chair. Mr. E. C. Ravenscroft (the secretary) read the notice convening

The second general meeting of shareholders was held at the Cannonstreet Hotel, on Monday,—Mr. J. B. TIPPETTS in the chair.

Mr. E. C. RAVENSCROFT (the secretary) read the notice convening
the meeting.

The report of the directors stated that the position of the company is one of
strength and soundness, offering material guarantees for the realisation of much
financial prosperity in the future. The chief management has been entrusted to
Mr. J. Kitto, M.E., of Llanidioes, and the directors have every reason to be satisfied
with it. The ore sales for the first year are highly satisfactory, when it is remembered that the company had no stoping ground of any importance opened out at
the time of taking possession. The ore sales in the coming year will be yet more
satisfactory, as the ore ground continues to lengthen. The company have ample
runds at command (fully sufficient, the directors believe, for all necessary purposes)
to enable them to bring this property into a profit yielding state, and before the
second financial year closes, if the prospects continue as they now are, this mine
which the state the description of their present satisfactory position and prospects.

The report of the manager (Mr. J. Kitto) congratulated the shareholders on the
success which has attended their operations from the commencement, together
with giving a brief description of their present satisfactory position and prospects.
It is now just 12 months since they commenced the underground operations, during
which time they have re-arranged and improved the pitwork from the adit to the
22 fm. level, communicated an air shaft from surface to the adit level (which has
thoroughly ventilated the eastern part of the mine, sunk two winzes for ventilation
and for opening out ground for stopes, one from the adit to the 10 fm. level with
22 fm. level, communicated an air shaft from surface to the adit level (which has
thoroughly ventilated the eastern part of the mine, sunk two winzes for ventilation
and for opening out ground for stopes, on

they will be able by that time to fully double the present returns, and make still larger profits.

The CHAIBMAN said it devolved upon him to make a few remarks in asking the shareholders to adopt the report and balance-sheet. It was a satisfactory duty he had to perform upon the present occasion; he could refer with pleasure to what took place at the last meeting, as he could now say that all then promised had been more than fulfilled. The position of the company was highly satisfactory in all respects, as had been seen by the balance-sheet submitted. The first thing that would strike shareholders was the fact that the whole of the shares issued had been taken up, and there were none in the hands of the directors unappropriated, the full 10,000 shares having been taken up, and with the exception of a small amount of calls still due, the whole amount had been paid upon them; that the shareholders would consider a most satisfactory position for a company so young as their own. As to the profit and loss he need not pany so young as their own. As to the profit and loss he need not refer to the respective items, because if any question were raised upon them it would then be more convenient than now to go through them. Their ore sales had reached a very much larger amount than Mr. Kitto had promised at the last meeting, as the sales had been 15 to 20 tons per month, and for the last two months the sales had reached 30 tons per month; and he believed he was perfectly warranted in saving the sales were not likely to decrease but on the reacted to supper month; and no believed the was perfectly war-ranted in saying the sales were not likely to decrease, but, on the contrary, would in all probability considerably increase. He should leave explanations as to the mine to their manager, Mr. Kitto, and if afterwards shareholders desired to put any questions he (the Chair-man) should be most happy to afford the additional information sought. He then moved that the report and balance-sheet be re-ceived and adouted.

in Cornwall is remarkable. People do not know the difference between coal and slack, and a mixture of the two quite satisfies them. They are forced to take coal that has lain at the pit's mouth and on the wharves for months, until the air and water have crumbled it to dust, or so charged it with moisture that one buys water at 20s, per ton instead of fuel. If Mr. Rule's statements can be credited, coal should be delivered on our mines at 14s, per ton. Say 7s. at the port f.o.b., 3s. 6d. freight of hired steamer, 3s. 6d. quay dues and carriage to the mine, this would effect a saving of 700% or 800% a year in Dolcoath alone.

Notwithstanding the unaccountable prejudice against Scotch coal the Government fleets mix it with Welsh coal, and find it results in

existence as the Wye Valley. He could but regret that the dark clouds of suspicion and want of faith should still diminish the confidence of the public in mining as an investment; in this, as in other matters relating to investments a change must soon occur, and he ventured to hepe that the posision they showed to-day would beget a commencement of returning confidence in the public mind, and they would see that there were good mines still, honest promoters and directors who could be trusted. He thought a few more such examples as they now showed and his hopes would be realised. Mining had made more fortunes than any other species of investment, and the loss, where it has occurred, is relatively most infinitessimal when compared to the gains brought by mining, and more particularly, he thought, the gains gotten from these Welsh hills. No fortunes made in trade at all equal the fortunes got by mining, and when he said mining he did not mean by means of the mushroom companies so prevalent during the past five years, but more particularly companies such as this, who with capital, skill, and knowledge attack these vast strongholds of wealth, certain of that reward which patient perseverance has ever been rewarded with Mining had also been a most fashionable investment. Queen Elizabeth did not deem it beneath her dignity to bargain with the Earl of Neutwenterland. Mr. Pulseys and others for a chare of their certain of the results of the results of their certain of the former of the properties of their certain of the properties of the properties of their certain of the properties of their certain of the properties of their certain of the properties of mining had also been a most fashionable investment. Queen Elizabeth did not deem it beneath her dignity to bargain with the Earl of Northumberland, Mr. Pulsey, and others for a share of their gains. The aristocracy of a later period joined together in a society called the Mines Royal, and from a list of the names which is now in his possession the fact was disclosed that the nucleus of many large fortunes owned now by titled inheritors arose originally from investment in this company. This was by no means all that Welsh mining had done. The produce from the Welsh hills had been the means of bestowing upon London one of the greatest blessings it could enjoy—pure water. It was the large fortune which Sir Hugh Middleton had realised from the Welsh hills that enabled him to construct the New River, and royal armies had more than once benefited from the same source. But he would not detain the meeting by recounting the inestimable advantages that had arisen, nor the fabulous fortunes that had been and still were being accumulated from this great storehouse of Nature's wealth. Suffice it to say that what had been done in other mines in days of yore would most certainly be again realised in the present day by the experience and honest application of capital, guided by skilful administrative ability. All he could say was that Wey Valley had already presented such a substantial earnest of its great value that there seemed no reason whatever to doubt it had commenced a career of prosperity in which he housed every shareholder would. Jung participal care and the second of the present day by the experience and the property in which he housed every shareholder would long participal was the second of the present of no reason whatever to doubt it had commenced a career of pros-perity in which he hoped every shareholder would long partici-

serity in which he hoped every shareholder would long paste. (Hear, hear).

Mr. Powell, thought the directors' fees were somewhat excessive.

The Chairman said the item extended to a period of 14 months. As stipulated by the Articles of Association the directors' fees were 500, per annum.

Mr. White was of opinion the directors' fees should depend in a great measure ipon the prospects of the company, but under the circumstances, seeing the prosperity the company had attained after only a years' existence, attributable to the itention of the directors, aided by the skillid experience of Mr. Kitto, he should must certainly oppose any proposition that might be made to reduce the directors' less, which he considered extremely moderate.

Capt. Ross, speaking as a shareholder and not a director, wished the meeting of understand that the board had not arranged these fees for themselves. It was for the shareholders to determine whether the sum was large in proportion to the capital.

the capital.

Mr. John Kitto, M.E., said he always had much pleasure in meeting shareholders in the mines under his management, but on this occasion more particularly than any other, at least for many years, He thought this was the first mine with which he had been connected—indeed, the first he had known in all his experience—that ing shareholders in the mines under his management, but on this occasion more particularly than any other, at least for many years, He thought this was the first mine with which he had been connected—indeed, the first he had known in all his experience—that had been brought into a paying state during the first year of its history. They were told this mine was situated on the same lode as the celetrated Van Mine, but they had never been told they would find another Van Mine, because he looked upon the Van Mine as a most extraordinary affair—not an ordinary mine, but an extraordinary one, and altogether a well-conducted establishment. Apart from the Van, he thought they might safely say there was not another in the whole district that had produced usuch results as the Wye Valley had done in the same period. There were a great many mines on the Van Iodo and one in the same period. There were a great many mines on the Van Iodo chused the same results in the same time. They had only been at work a few months, and no very extraordinary results could be expected in that time. At the commencement no very great promises were made, but he was happy to say such as had been made were already more than fulfilled. A great deal of preliminary work had been done, and the main shaft was down to the 3t m. level; but the works so far had only been extended to the 22, the principal operations being above that level—at the 10 fm. level and adit. The 10 had passed through and was still in a self-them, which, he considered, at such a depth a most extraordinary result. At that point they came to a "nip," the lode became contracted, or rather was thrown from north to south, and they drove for 6 fms. before any ore was met with, and they then had to cross-cut, and the lode continued worth 30 cuts. of lead per fathom. Immediately over this point in the adit level there was nothing whatever, or the western part of the mine had not been so productive, but going west from the engine-shaft they were getting into shallow ground. The 3 westero

The CHAIRMAN said the policy indicated by Mr. Altow was that which the directors had adopted, and would continue to adopt. They wanted to make this a valuable property, and not a mere field for speculation.

Mr. HALFORD said when the property was first introduced to his firm they made the most stringent enquiries as to its merits. Having satisfied themselves upon that point, they invited a few of their friends to visit the mine, and having thoroughly examined it they came to the conclusion it was a mise it properly developed would at once become droductive and highly profitable. Having arrived at that conclusion they communicated with their friends in different parts of the country, and the result was the formation of the company. The superintendence was placed in the hands of Mr. Kitto, in whom from past experience they placed the utmost confidence, and within 12 months they had something like 25000, worth of lead, which was almost unprecedented. An examination of the accounts would show that during the past four months theore sold had realised 1600', which upon a most moderate calculation would give a clear profit of about 1500, per month, available for dividend. From his knowledge of the mine, and from what Mr. Kitto had told him, he should fully expect to find a balance amply sufficient to pay the 10 per cent. interest, the same as the shareholders had received this year. A question had been asked as to whether the money in the hands of the directors, amounting to 3000', would not be expended for the further development of the mine; if he had not mistaken Mr. Kitto's reply, it was intended to devote the profits in head work, which was properly chargeable to capital, if that were the case they would be keeping their capital idle while, its legitimate employment was to pay or the further development of the mine; if he had not mistaken Mr. Kitto's reply, it was intended to devote the profits in head work, which was properly chargeable to capital, if that were the case they would be keeping their capital idle w

adopted. Messes. Harry Brett, Milford, Pattinson, and Co. were re-elected audi with a remuneration of 15 guineas for the past year's services. A vote of thanks to the Chairman and directors closed the proceedings.

GAWTON COPPER MINING COMPANY.

A general meeting of shareholders was held at the offices, Austiniars, on Wednesday,—Mr. HUNTER in the chair.
Mr. HICKEY (the secretary) read the notice convening the meeting, and the minutes of the last were confirmed.
The accounts showed a debit balance of 281% 0s. 6d.

ing, and the minutes of the last were confirmed.

The accounts showed a debit balance of 2811. 0s, 6d.

The report of the agents was read, as follows:

Sept 13.—We beg to hand you the following report of this mine for the general meeting to be held on the 18th inst., showing the present position of your property, and the principal points of operation during the past four months, including the improved condition of our machinery and pitwork, to contend against the increase of water flowing from the adjoining mines, all of which is now in first-rate working order, and keeping the mine drained with ease. At the 105 a new 10-in. plunger-lift has been fixed, with main rods, stays, &c., all complete. Below this level the drawing-lifts are put in thorough repair to the bottom of the mine. The engine-shaft has been depended 9 ft. below the 117, for the twofold purpose of depositing the stuff as a trip-plat, and at the same time the necessary preparations for sinking the shaft to a deeper level. The 117 is extended east from King's shaft 43 fms. 1 ft. 6 in. The lode in the end is improving both in size and character, being 4 ft. wide, producing very strong arsenical mundic, with fine stones of ore, to the value of 51. per fathom. The lode in the stopes in the back of the 117, some 15 fms. behind the end, is worth 102. per fathom going up, and in the bottom of the level going down worth 151. per fathom. The lode in the winze sinking below the 105 east is 6 ft. wide, yielding arsenical mundic and good quality ore to the value of 154. per fathom. The rise in the back of the 95 has been communicated with the winze sunk below the 82, which has thoroughly ventilated the workings and opened out the orey ground in proper sections, where we are stoping both east and west of the said rise upon the lode, worth 181. per fathom. Two other stopes are working in the bottom of the same level worth respectively 61. and 81. per fathom. The 82 is extended east from shaft Sg fms. The lode in the direction, where we have discovered fine sto

Rows, George Rowe, jun.

The CHAIRMAN, in referring to the accounts, stated that they had been brought up as closely as possible. There was nothing much he could add to the report just read; all would admit that the position of the mine was very satisfactory, compared with what it had been for some time past. Capt. Rowe had gone into the matter with the committee with regard to the relative prospects, and he seemed to think that the wine would not only maintain its present residies. committee with regard to the relative prospects, and he seemed to think that the mine would not only maintain its present position, but that there were very considerable prospects of working into a profitable condition; therefore, although the operations of the past had resulted in a loss, he hoped at the next meeting the accounts would show not only that there had been no loss, but possibly that a profit had been realised. Capt. Rowe spoke of a lode 40 ft. wide, from which he expected some very good results. Taking all circumstances into consideration, he thought he could congratulate his coproprietors upon the improved condition of their property, and still more so upon the encouraging prospects presented for the future. He then moved that the accounts be passed and allowed, and with the report be entered on the minutes.

Mr. M'Callan seconded the proposition, and pointed out that while the returns had increased the mine itself had improved.

Capt. Rowe, in reply to questions, stated that the standard for copper had improved alone the last meeting, and it was generally supposed a further advance would take place.

The Chalban mentioned that the increased returns during the past four

Capt. Rowe, in reply to questions, stated that the standard for copper had improved since the last meeting, and it was generally supposed a further advance would take place.

The CHAIRMAN mentioned that the increased returns during the past four months had been on account of the larger quantity of mundic.

Capt. Rowe said that one source of saving in the future would be from a lessened consumption of fuel, arising from the re-starting of the Okel Tor Mine, which drained some of the Gawton water.

The accounts were passed and allowed.

The CHAIRMAN said that although the company's financial position had much improved, and the prospects were encouraging, the committee were desirons to place the mine upon a sound financial basis, and with that view had determined to recommend a call of 2s. per share.—A call of 2s. per share was made.

The CHAIRMAN explained that at the last special meeting, held in June, 312 shares were forfeited for non-payment of calls. One of the holders of those shares had sent a cheque on account of his calls, which was received at the office the day following the meeting. The committee were unwilling to accept the responsibility of restoring the shares in question without the authority of the shareholders.

Upon the proposition of Mr. M'CALLAN, seconded by Mr. COLLINS, it was unanimously agreed that the chares should be restored.

The committee of management were re-elected, with thanks for past services. A vote of thanks to the Chairman closed the proceedings.

WELSH FREEHOLD COAL AND IRON COMPANY.

A general meeting of shareholders was held at the London Tavern, Tuesday, Mr. G. H. PAYNE in the chair. on Tuesday, Mr. G. H. PAYNE in the chair. Mr. W. P. Belliss (the secretary) read the notice convening the

on Tuesday, Mr. W. H. Fayne in the chair.

Mr. W. P. Belliss (the secretary) read the notice convening the meeting.

The directors' report stated that the circumstances of the company have assumed so grave a character that it is necessary to consider its position, and whether a resolution should not be come to to wind up voluntarily. At a meeting of some of working to the deep: this sum was subscribed amongst the principal shareholders, and a considerable portion of it paid into the hands of trustees to be handed to the directors upon a proper mortgage being executed by the company. Whilst the directors upon a proper mortgage being executed by the company. Whilst the directors upon a proper mortgage being executed by the company. Whilst the directors were endeavouring to make terms with the creditors, and arranging to put up the engine, a flood occurred, which carried away one of the bridges and did other serious damage to the railway; your directors found that the dead chages were increasing so rapidly, and would continue to do so, that the sum of 5000?, would be insufficient to meet them and the cost of repairing the railway. In addition to this, it was found difficult to make satisfactory arrangements with some of the creditors, and one of them levied an execution at the works, and one of the mortgagees went into possession. The directors feel it their duty to lay these facts before the shareholders, that they may consider what should be done at a meeting. The long-continued depression in the coal trade and a succession of unforeseen difficulties have paralysed the efforts of your directors, and they feel it would not be fair to those who have subscribed to accept their money, and they, therefore, have intimated this to the trustees for the shareholders with have subscribed in the directors begins have paralysed the efforts of your directors, and they feel it would not be fair to those who have subscribed to accept their money, and they, therefore, have intimated this to the trustees for the shareholders who

been forthcoming when first asked for the directors believe a fair profit would have been the result, irrespective of all these drawbacks.

The CHAIRMAN said in asking the shareholders to adopt the report and balance-sheet, he would draw attention to the fact that in September, 1874, the directors sent a circular to the shareholders informing them of the necessity that more capital should be subscribed. The response to that circular was an application for some 400%. If the shareholders had had at that time given the directors more capital they would have been able to place before the meeting now a very different balance-sheet. They had worked 18,000 tons of coal, but had they been provided with more capital the output could have been increased 1000 tons per week, while the extra expenses would have been 11,000l. The total expenses of the trebled output would not have exceeded 25,000l., and they would have received 31,000l. to the credit of the company. Coals had sold for 10s. 11d. per ton, the sum shown in the accounts was the net amount, everything having been debited. He thought he might fairly state if the output had been trebled the amount he had indicated would have been

put had been trebled the amount he had indicated would have been realised. He then moved that the report and balance-sheet be received and adopted.——Mr. J. M. STUART seconded the proposition. Mr. Locke should have considered that the large holding of Mr. Stuart or served shares would have induced him to have given his cheque at once for the amount required. All the shares held by Mr. Stuart were bonus shares, upon which there had not been paid any money. Mr. Payne and his friends had contributed 20,000/. and the public 40,000/.

Mr. STALLABD said that from the time the company commenced operations the less had amounted to 13,000. He wanted to know where that had gone to? It was true they had made a railway, and had purchased wagons, which had not been paid for. The railway had cost 85001, and it now required to be repaired at a cost of 5001.—The CHARDMAR, in reply to a question, stated that everything had been included in the mortgage.

Mr. BENHAM said not one single clause in the prospectus had been carried out. Mr. J. M. Stuart said that no one felt more sorry than he did that any shareholder should have made a loss. Many appeared to be under the impression that he (Mr. Stuart) had made a large sum of money by this company, whereas the fact was he had lost thousands by it. He thought they had good property, and he still believed so, and he felt perfectly satisfied that someone would yet get hold of it and realise a large fortune. Want of money was the only reason the company was in its present position.

Mr. Benyman said Mr. Stuart purchased the property for 30,0001, and sold if covered in the Principality, always excepting the Val, where the property of the Company of the Charman and the Company of the Charman was not aware that any delay had taken place, and he would take some further discussion the report and balance-sheet was received and that the Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l. In cash, the barman said that Mr. Stuart had received only 19,000l.

lance being paid him in shares, the total amount being 71,000l. Of the 40,000l, paid in shares, 30,000l, still stood in the hands of the company, the balance of 11,000l, went to the guarantee dividend accountly transpired, had been qualified as a shareholder by Mr. Snooke (the engineer of the colliery, and now a orditor of the company), reviewed at some length the history of the undertaking. He states if something was not done by the present shareholders the whole property weak revert back to those who originally sold it.

Mr. Sruahrs and it was very easy for a member of the legal profession to come to a meeting, and because he had "the gift of the gab" move the shareholders to declings of resentment. Mr. Webb, who had just spoken, was but a shareholder of yesterday, and cared nothing whatever about the company, and knew less. When 103,000l. was asked for the property they were advised it was worth that amount by a properly qualified engineer. A large proportion of that was to goter a guarantee fund; it was afterwards decided to reduce the purchase-money, because the number of shares did not come forward. The property was at one time mortgaged for 40,000l., and the time would come when it would yield large fortunes to its owners. It consisted of 1300 acres of freehold land, and contained millions of toos of coal.

to its owners. It consisted of 1300 acres of freehold and, and contained millions of tons of coal.

Mr. Locks suggested that Mr. Stuart should subscribe the necessary amount of capital. — Mr. BTUART said that nothing would give him greater pleasure were he in a position to do it. — A SHAERHOLDER asked Mr. G. Webb when he boughthis shares? — Mr. WEBB said he had not bought them, they were given to him. After some further discussion of an unimportant character an amendment was put by Mr. WEBB, and seconded by Mr. BEENHAM, that the report and balanched by Mr. Beenham, the theorem of the coalest of the

An extraordinary general meeting was then held, Mr. G. H. PAYNE in the chair.

An extraordinary general meeting was then held,

Mr. G. H. PAYNE in the chair.

The CHAIRMAN said he was one of the directors who had been on the board from the commencement, and he much regretted the other directors were absent. When the company was formed it was decided not to allot until 8000 shares had been applied for, which they considered would provide ample working capital. Soon after the allotment money had been paid, one of the shareholders, holding 2000 shares, stopped payment, and was unable to pay up the balance of the calls, amounting to 6000/. The next trouble was they were unable to construct their railway across another property; to surmount that difficulty had cost them 3000/. or 4000/. which had never been atticked they were the told that the South Wales Mineral Railway would alway their engines to go over the Welsh Freehold line, which was of importance, seeing a large coal business was springing up. That, however, fell through, which necessitated the purchase of a locomotive, costing some hundreds of pounds. The low something incalculable. They purchased a powerful hauling and pumping engine, which cost about 1100/., which it was intended to erect, in order to enable them to sink to the "deep," but they found there was not sufficient capitel to erect it, them to sink to the "deep," but they found there was not sufficient capitel to erect it, them to sink to the "deep," but they found there was not sufficient capitel to erect it, therefore, by the advice of Mr. Waring, they took a lease of an adjoining property, by which they hoped to be able to raise coal, and obtain money during the time the engine was being erected for hauling the coal from the "deep," The next trouble was the boring for the Resolven vein, which had cost some 1100/.: the seam had been reached, but, unfortunately, it had been hit in the very position where there was a fault; some authorities thought they had not yet gone deep enough. As to the guarantee fund, it was still in the hands of the trustees, and it seemed to be c

A vote of thanks to the Chairman closed the proceedings.

SOUTH ROMAN GRAVELS MINING COMPANY.

An ordinary general meeting of shareholders will be held on

An ordinary general meeting of shareholders will be held on Thursday.

The report to be submitted states that out of the 2730 unissued shares referred to in the last report 2077 were applied for and allotted at 12 each, leaving 653 on hand. Shortly after the last meeting Mr. Edwin Crawshay, a large shareholder, joined the direction and made a personal inspection of the mine; he is of oplulon that it offers great prospects of success, but the best way to ensure that success, he thinks, would be to confine all operations to sinking the shaft in the 60, below addit. The shaft is down 35 fms. below the adit, and to get it to the 60 will cost 2500%. The lode down to the depth last seen was of a very promising character, and occasionally yielded good lead, and if funds full short to reach the 60 without any returns of lead, the lode can be tested in the 40 or 45 fm. level stame the arrived that the manager (Capt. John W. Powning) states—
The opinion expressed by Mr. Crawshay, and the mode of working suggested in accordance therewith, embodies his views regarding the matter; and the only way to find a mine here is to push the shaft down to the 60, and then drive on the lode to the boundary west, and to the shale eastward. If they do not make a discovery at that depth (but he believes they will do so) they will then be satisfied that the mine has been fairly and fully tried, which cannot be said of it now. They are sinking the shaft at the rate of 2 fms. per month; and, should this kind of ground continue, he calculates that the outting of the lode in the 45, doing sundry alterations to the pitwork, and sinking the 24 fms. required to put them 66 fms. below addit level, will be completed in about 15 months from this date. The new lode discovered in the foundation of the engine-house, north of the main lode, is of similar character to the latter as seen when it cropped out to surface. No 1 lode is 12 fms. to the south of the new, or No. 2 lode; the first underlies south 2 ft. in 6t., and the other in the same direction

mine to the 60, but he estimates it at 2500l. to 2600l., including everything.

EAST WHEAL LOVELL.—A meeting of adventurers was held at the Sur Hotel, Helston, on Wednesday. Mr. H. Kogers, the purser, in opening the precedings, said he was very glad to meet the shareholders, because the mine was looking well, and also because the price of in was looking better. He haddeferred the meeting until now, in consequence of the low price of tin, and there sult of this was that instead to selling at 46l. 10s. per ton they on Saturday received 52l. 5s. The purser explained that the tin in stock would have been sold, but as the market looked better it was held back in the expectation of a further rise. "On the whole, our prospects are very cheering." The reports and accounts were passed, and an opinion was confidently expressed that there would shortly be another rise in tin. The adventurers afterwards dined together at the hotel, the purser again presiding. The company included Mr. A. W. Young, M.P., Messrs, F. Penberthy, W. Sleman, T. Treloar, W. Treloar, H. P. Vivian, J. Jeffery, Capt. Quentrall, E. Cudlip, Ellis, Chappell, &c.

'For remainder of Meetings see to-day's Journal.]

Registration of New Companies.

The following joint-stock companies have been duly registered:-The following joint-stock companies have been duly registered:—BRYN ALYN LEAD MINING COMPANY (Limited).—Capital 30,000l., in 10. shares. To acquire the Bryn Alyn Lead Mine, situate in the parish of Linarmon, the property of Mr. Matthew Heslop. The purchaser, Mr. John Child, is to pay 9000l., of which 4000l. is to be paid in cash. The subscribers are—John Child, B.A., Houghton-place, Bradford, gentleman, 100; M. Heslop, Southbrook-termse, Bradford, manager to the Singer Manufacturing Company, 500; J. Littlewood, 51, Market-street, Bradford, insurance agent, 10; J. Blackburn, Bradford, seconnant, 1; G. H. Field, 51, Market-street, Bradford, printer, 1; T. Aksoyl, Bradford, merchant tailor, 1; A. MaNeh, Klukgate, Bradford, S. The directors are—Messrs. John Child, John Prior, J. Lloyd, and Matthew Heslop, the qualification being 20 shares.

cation being 20 shares.

IMPERIAL CHROLE COMPANY (Limited).—Capitul 100.0001., in 101. shares.

To carry on business as monetary and financial agents. &c. The subscribers are

E. J. Webber, Park-road, Red Hill, 10; W. Hodson, Hurstplerpoint, Sussex, sellcitor, 10; H. Christie, S. Eigin-road, Kensington Park, 10; L. F. Cottam, 26, Aber
road, St. John's Wood, 1; T. H. Barker, Junior United Service Club, 10; H. E.

Parker, Money and South Kansington, 1; J. Ames, 40; Cromwell-road, Upper

Cameron, Drayton-road, South Kensington, 1; J. Ames, 49, Cromwell-road, Dyst-Holloway, 1; J. Thompson, 37, Throgmorton-street, 1. WEARMOUTH CROWN GLASS COMPANY (Limited).—Capital 39,000., in 100. shares. To acquire the business and works of the Wearmouth Glass Com-pany, at Southwick. The subscribers are—J. Fawoett, Ashbrook-terrace, Sande-land, 20; W. Moore, Sunderland, 20; T. Gibvon, Sunderland, 15; R. Presson, Sunderland, 40; R. Lewis, Sunderland, 20; J. W. Mattison, Brookfields, Sunder-land, 15; T. G. Mattison, Sunderland, GENERAL WORKS COMPANY (Limited).—Capital 500,000., in 1001, shared. To construct public works, and to carry on any business incidental to the construc-

GENERAL WORKS COMPANY (Limited).—Capital 500,000f., in 100f. shares To construct public works, and to carry on any business incidental to the construction of public works. The subscribers are—E. Clark, 5, Westminster Chambers, S.W., 200; W. H. Punchard, 5, Westminster Chambers, 100; J. Latimer Clark, 6, Westminster Chambers, 100; J. Latimer Clark, 6, Westminster Chambers, 100; J. Reese, 73, Ladbrook Grove, 100; N. G. Burch, Coine Cottage, Twickenham, 10; Paul Balme, Kirck Villa, Bexley Heath, 10.

MIDLAND PRINTING COMPANY (Limited).—Capital 5600f., in 10f., shares, the content of the content of the public soft a newspaper at Oldbury, Worcestershire, SHEFFIELD INCORPORATED LAW SOCIETY.—This society is "limited by guarantee."

SREFFIELD INCORPORATED LAW SOCIETY.—This services of the Street S

PEAT.-Mr. M. BROWN (for F. R. Verdier, of Paris) has paten some improvements in the treatment of peat and in the machinery for the The invention describes a set of machinery for working peat. Firstly, and treather or extracting apparatus by which the peat is raised from the bea

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IRON AND STEEL INSTITUTE.

reast works at Woolwich. The discussion upon this paper was postponed until a fainr meeting of the Institute.

The paper on "Fireclay and other Refractory Materials," by Mr. & J. SNELUS was taken as read, the discussion being postponed to a future meeting. He remarked that bricks are very porous bodies, and absorb a good deal of moisture even when under cover, and, of course, much more if allowed to get wet. In fact, apparently dry bricks often contain a good deal of water, and if put into a furnace in the state, and if the heat is got up rapidly, the bricks crack and crumble to lesses. This is especially the case with silica bricks, and the writer has known that a superior of the state of the stat

PLEMENT TO THE MINING JOURN

and practise this very slow and careful drying of their plant, but it is too otten neglected in mill and other furnaces.

"The North Staffordshire Coal Field, with the Ironstone contained therein," formed the subject of a paper by Mr. C. J. Howen, who described in detail the nature and qualities of the workable seams in the coal field, and by way of illustrating the vast wealth of minerals contained in the coal field, exhibited a section showing no less than 32 workable seams of coal of an aggregate thickness of 24 ft. down to the Wippenny coal. Taking into consideration the extent of these mineral resources, he said it was somewhat remarkable that it was only within a comparatively recent period was somewhat remarkable that it was only within a comparatively recent period to the first importance as an iron-producing centre, and ulimately rival its far-famed sisted division in this important branch of industry.

Discussion on this paper was also postoponed; and another paper, by Mr. Hackney, "On the Manufacture of Authracite Coal in South Wales," was held over till the Institute to the exercial committees, face, who had assisted to entertain the members, and to the exception committees, they who had assisted to entertain the members, and to the exception committees, and, in seconding the motions, Mr. I. Low-THIAN BELL said that they would all cortailly assent to the statement in one of the vesolutions that this had been a highly successful and agreable meeting. He did not remember one of their meetings so well attended. He did not know that which might be a largestly Increased in the display of the proper of the cortain of the proper of th

TROY AND STEEL INSTITUTE.

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The meeting was brought to a very successful termination by visit to the North Staffordshire iron and coal district. Although known to be one of the richest mineral fields in the country, this district has only been developed to a comparatively small extent. It is stated that the coal measures contain a total thickness of about It is stated that the coal. The beds extend under the red rocks on the western and south-western portions of the fields, so that the resources of the locality must be very great, and justify the expectation that in course of time it will become one of the most important manufacturing centres in the country. Hitherto it has been distinguished more as a mineral field than as an iron manu-

acturing district, large quantities of coal and iron ore being trans_orted to other localities. There are, however, several large fron making establishments in full work, and as the districts becomes developed, others will undoubtedly follow, the production of coal and iron in close proximity offering the greatest facilities for that end.

On their way to North Staffordshire the members wisited the locomotive works of the London and North-Western Railway Company at Carwe, where they were received by Ir. F. W. Webb, the company at Carwe, where they were received by Ir. F. W. Webb, the company at Carwe, where they were received by Ir. F. W. Webb, the company at Carwe, where they were considered to the Corwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men control to the Carwer works I have only to men the Carwer works I have only to the Carwer works I have not been controlled to the Carwer works I have not been controlled to the Carwer work I have been controlled to the Carwer work of the Carwer work I have been controlled to the Carwer work of the Carwer work in the Carwer work of the Carwer work in the

MANUFACTURE OF STEEL .- The invention of Mr. JAMES NOAD, of Plaistow, consists in taking iron or steel obtained by a process of chemical deposi-tion, and placing a small quantity of such iron or steel in a crucible, and pouring upon it cast-iron or other metal melted in a cupola furnace, so as to full the crucible. The crucible is then closely covered, and the metal is maintained at a high temperature for some time, and then cast into ingoits.

GALVANIC BATTERIES.—The invention of Mr. EDW. TYER, of Oldstreet, Finsbury, relates to cells of galvanic batteries, a single cell being a jar by ressel with grooves or lags in its interior or notches in its sides, into which is slid a perforated clab of non-conducting material to separate the two elements, and compound cells being formed in a box divided by permanent partitions into an number of cells, into each of which is slid a like perforated slab. In some cases the slab is clothed with a paper or porous fabrio. The chief object of the invention is simplicity of construction in a form which gives facility for cleansing all parts.

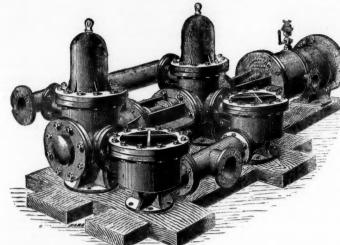
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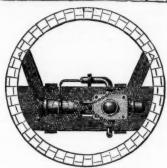
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MR. GEORGE GREEN, Mechanical Engineer to the above Company's Patents for DRESSING all METALLIC ORES. Dressing-floors having these Machines possess the following advantages:

1.—They are cheaper than any other kind in first outlay.

2.—From 60 to 70 per cent. of the labour is saved.

3.—Only about one-fourth of the space usually occupied by dressing-floors is required.

required.

4.—The ore is made clean at one operation, and 5 per cent. of ores otherwise lost is saved.

Drawings, specifications, and estimates will be forwarded on application to-GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.

EXTRACTS FROM TESTIMONIALS RECEIVED:-

EXTRACTS FROM TESTIMONIALS RECEIVED:—
Mr. C. E. BAINBRIDGE, of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 27th September, 1873, says—"After a full season's experience of the very complete Dressing Machine erected by yot at our Colberry Mines, we are fully satisfied with our decision to adopt your pateria in preference to all others. The machinery does its work as well as we can desirt, and better than we anticipated. We are now getting through 70 tons of oresuff per day, of rich quality. Without your machinery we should have been at a standstill, for we cannot get hands to supply our wants elsewhere. It saves fully only in the supply our wants of the cold wages, and vastly more on the wages we now give, and the saving in ore is not much short of 10 per cent. You can quote from this letter as yet think proper."

Mr. COULTAS DODSWORTH, of Haydon Bridge, writes, on the little January, 1874:—"I have just returned from the Stonecroft and Greyside Mies, where I have seen your 'Patent Ore Dressing Machinery' at work, with which insut say, I was highly pleased. It is decidedly the best machinery I have ever seen for the purpose, the results being as near perfection as possible, and I am quite sure its use in this case will be a very great saving to the company. No lark mining establishment should be without your machinery, especially when labour is difficult to procure—a mere fraction of the hands being only required as sgainst the old system, and the work altogether much better done, and a great saving of ore effected. I have heard it said that your machinery is better adapted for por than for rich ores, but from what I have seen to-day I am quite confident it will do for any kind of ores. I begn not only to congratulate, but also to complimed, you on the great success of your 'Patent Ore Dressing Machinery.' You may us this letter as you think proper."

Mr. Montague Brale, Managing Director of the Cagliara Mining Company (Limited), says, on May 15th, 1873:—"I have much pleasure in spaling of the great efficiency of your 'Patent Dressing Machinery,' as erected by you at our mines at Rosas, in the Island of Sardinia. You will remember it has always been considered impossible to dress, or rather separate, the minerals our ore coatain by machinery, but our captain assures me he gets a constant return of 79 per cent. of lead with the greatest ease, and I know by the returns we are realising be best market price. I consider this company is much indebted to you for the secess you have achieved at an small cost. If may integer to you from the best market price. I consider this company is much indebted to you for the secsor you have achieved at so small cost. It may interest you to know, from my experience in several of the British possessions, including the whole of the autican efficiently, and at so small a cost, dress, and separate metallic ores, however close the mechanical mixture may be, as yours. You can use this letter in any way you like."

The most satisfactory testimonials also have been received from the GRE MINE COMPANY, Westmoreland: the TALARGOON MINING COMPANY, Wales, and others. Copies of these may be had from Mr. GREEN.

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THE "LEVET" ROCK DRILL.



COPY OF TESTIMONIAL FROM THE ENGINEER, BLANZY MINES, FRANCE. Feb. 25, 1875.

I hereby certify that the new Rock Drill of C. Levet's System has worked at the Blazy Mines since Nov. 20 without there being the slightest necessity for repair. Its results up to this date have been superior to the other Rock Drills employed in the said mines.

(Signed)

THE ENGINEER OF THE MINES, POUMAIREAU.

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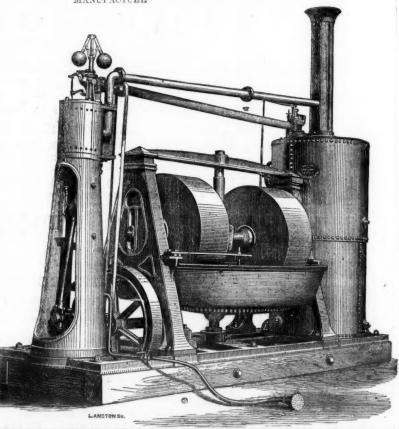
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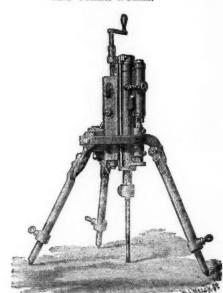
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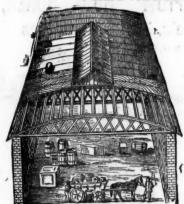
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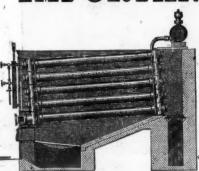


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